

# Optimizing DevOps Initiatives: The View From Both Sides of the DevOps Divide

By Steve Hendrick, Dennis Drogseth  
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# Optimizing DevOps Initiatives: The View From Both Sides of the DevOps Divide

## Executive Summary

A great deal has been written and debated about the trend toward DevOps and agile methodologies, with reflections on not just development, but how IT is changing. Much of the industry opinions have taken on something of a mythological character, extolling development and evolving new roles like site reliability engineers (SREs) as the future, while relegating operations and IT service management (ITSM) as reactive expressions of the past.

This research examined the broader development and operations transformation in a more balanced manner, unearthing trends that reflect clear values and requirements on both sides of the equation. The data here suggests that while development has an increasingly important role to play, that role can only be effectively enabled and advanced by a more proactive and strategic approach to operations and ITSM.

Along these lines, the strategic values of investments in automation; IT analytics such as AIOps, application performance, and end-user experience management; and broader terms of engagement between development and IT all promote far more successful outcomes than enclaves of isolation and fragmented silos. The need for more versatile but inclusive ways of sharing information via consistent, dynamic, and proactive/prescriptive insights, along with complementary levels of more advanced automation, couldn't be more relevant to effective IT transformation in supporting full application lifecycle benefits and a more enlightened approach to DevOps going forward.

Some of the highlights from the research were:

### Organization

- IT organizations that involved more organizational groups and stakeholder roles in their DevOps initiatives were consistently more successful and more progressive.
- Success in performance, relevance, and value strongly affiliates with the move to DevOps decentralization.
- While strong CIO-level involvement was a distinct plus, minimizing business involvement—particularly CEO involvement—also aligned strongly with success.
- On a quantitative scale between seamless and confrontational, DevOps interactions were skewed toward the positive, with 46% leaning toward seamless and only 15% leaning toward confrontational.
- The correlation between DevOps and digital transformation is significant, with only 7% showing no plans for digital transformation, while of those with digital transformation underway, only 9% have no plans to integrate digital transformation into their DevOps initiatives.

### Agile methods and productivity

- Responses indicated that on average, slightly more than half of custom enterprise applications are using agile methods in 2019.
- When asked about whether their production deployments increased or decreased, responses strongly indicated an increase (81%), with only 15% claiming no increase or decrease, and only 4% showing a decrease.



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## *Application performance in production*

- Most IT organizations are still lingering with siloed tools in operations and are therefore more prone to be reactive than proactive in how problems are resolved.
- Fewer than 40% of performance issues with applications in production are fully remediated, on average. The clear majority were addressed by workarounds and restarts.
- Only 12% of respondents had no DevOps/ITSM handshake, and when EMA compared them with the other groups, they were consistently the least effective.
- More than half (54%) indicated that they had created both a fast track and a more traditional track for managing change to accommodate agile and more established ITSM best practices.

## *Technology priorities*

- Adoption of more toolsets across the full lifecycle led to more successful and more progressive outcomes in areas such as digital transformation, analytics, and automation adoptions. Ongoing EMA research on multiple fronts also underscores the need for toolset integration.
- The net effect of DevOps on operations was positive for 55% of respondents, and negative for only 10%.
- Fifty-five percent of respondents indicated that AIOps or advanced IT analytics were extremely important or very important in supporting DevOps initiatives, while 69% viewed automation as extremely important or very important.

The extensive and overlapping collection of questions that comprised this survey point to two critical areas identified by large enterprises as crucial to DevOps success. The first is resolving the bidirectional handshake between Dev and Ops. The second critical issue identified by enterprises as crucial to DevOps success is establishing a meaningful way to communicate and work with LOBs. This issue surfaced in multiple ways (as a DevOps problem, an area where DevOps was least effective, and as a DevOps objective).

## **Methodology**

### *Survey Parameters and Screening Criteria*

This worldwide web-based survey with a sample size of N=400 was fielded in March 2019. Geographically, 50% of the sample was from North America, 25% was from Asia Pacific, and 25% was from Western Europe. Larger enterprises (1,000 employees or more) were the focus of the survey to ensure the analysts would encounter the more complex issues of moving from the pipeline into production. Screening was also in place to ensure that EMA surveyed enterprises that were actively involved in custom application development and had strong familiarity with DevOps. The sample for this survey included all major vertical industries, except education and IT product and services companies.



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## Demographics and Qualifiers

This survey was stratified by job role category. EMA looked for participation from five specific categories: application development, IT operations, IT management, ITSM, and C-level executives. Figure 1 shows the distribution of respondents

across these five categories. While application development accounted for the most respondents, each of the categories had 60 or more respondents.

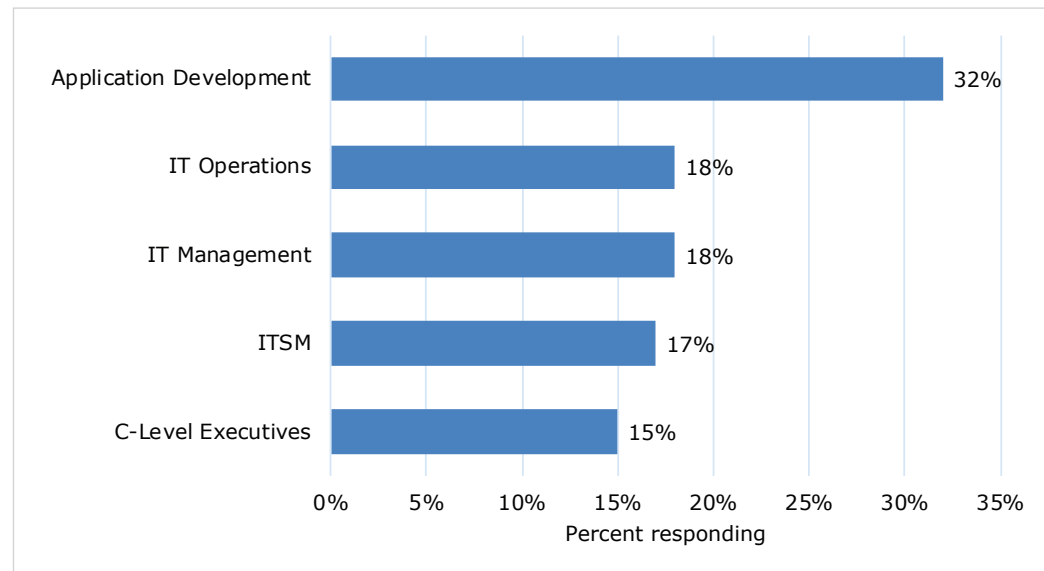


Figure 1: Respondents by Role Category

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Due to the focus of the survey on optimizing DevOps, enterprise involvement in the development of custom applications was paramount. Enterprises that did little or no custom application development were screened out of this survey. Figure 2 shows the distribution of respondents across three different approaches to application development. It was surprising, given the current digital world,

that 33% of the sample only engaged in internally-focused application development for their informational needs and those of their business partners. This left 67% of the sample to develop a combination of internally-focused and externally-focused applications. It was encouraging to also see that custom-developed applications were pervasive across 28% of the sample.

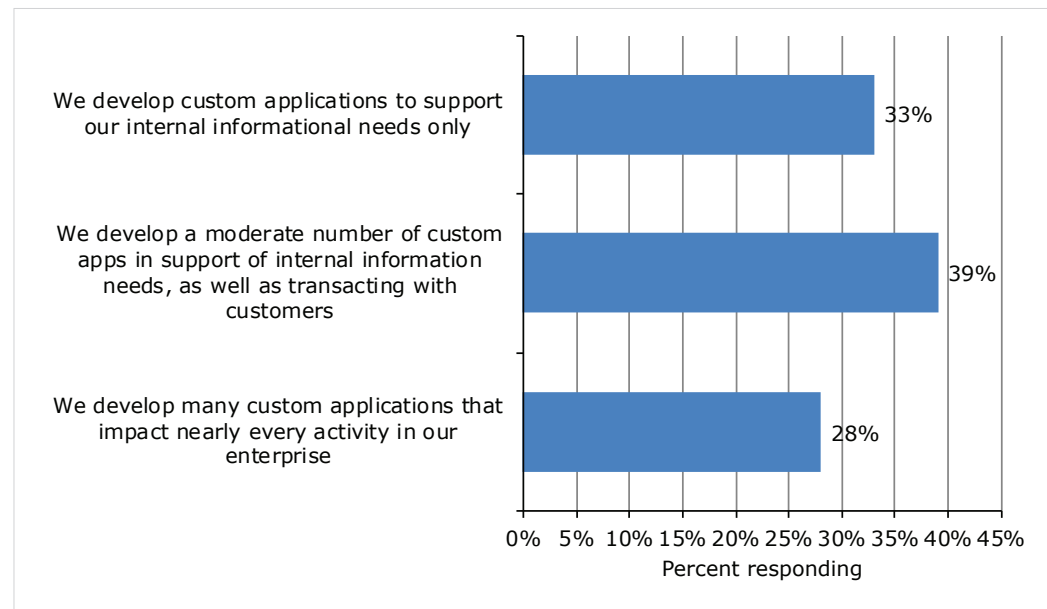


Figure 2: Approach to App Dev

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Breaking out an enterprise's approach to application development by a self-assessment of how effective the enterprise is at DevOps and agile from the perspectives of quality, performance, and relevance is shown in Figure 3. Companies that have a limited agenda for application development

(a focus on internal informational needs only) were the most ineffective in their approach to DevOps. Alternatively, companies in which IT-developed applications were pervasive (development impacts nearly every facet of the company) were very effective in their approach to DevOps.

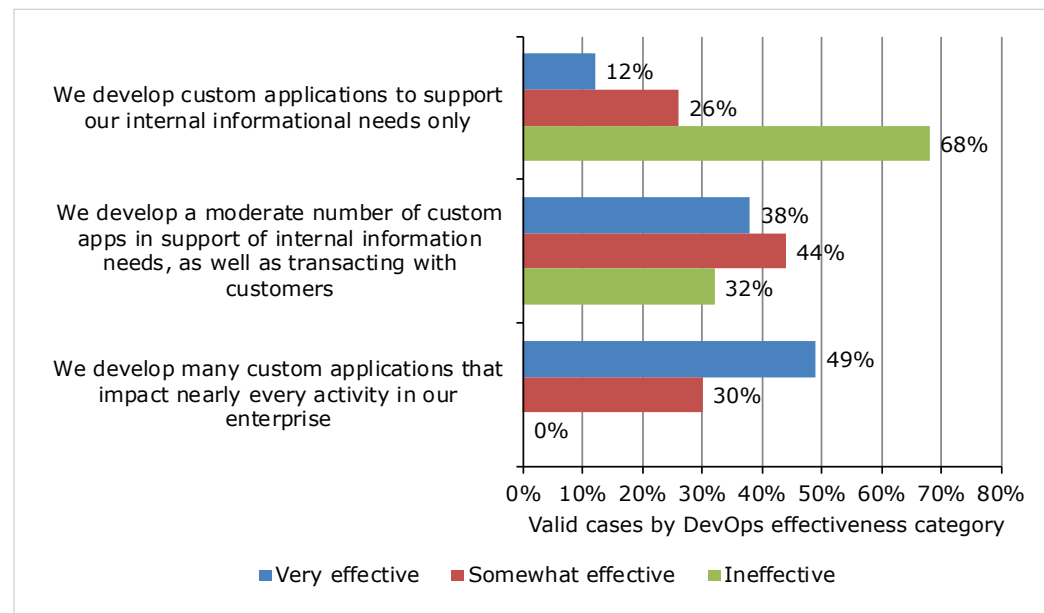


Figure 3: Approach to App Dev by Agile/DevOps Effectiveness



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## Strategic Priorities

This section of the report evaluates agile and DevOps maturity, the leading DevOps activities, what's driving DevOps, and how much latitude developers are permitted in selecting tools. Agile and DevOps maturity are important distributions because they provide a sense of how much headroom exists for vendors to provide new DevOps products and services.

Figure 4 shows a self-assessment of agile maturity. The distribution is relatively normal, but is skewed in the direction of enterprises that are

beginning their agile journey. Grouping the first two responses yields 42% of respondents who are essentially beginning their agile journey. The third category (in the middle) is representative of enterprises in agile transition that comprise 29% of the sample. Finally, the fourth and fifth responses can be grouped together into 28% of enterprises for which agile is mainstream or part of their DNA.

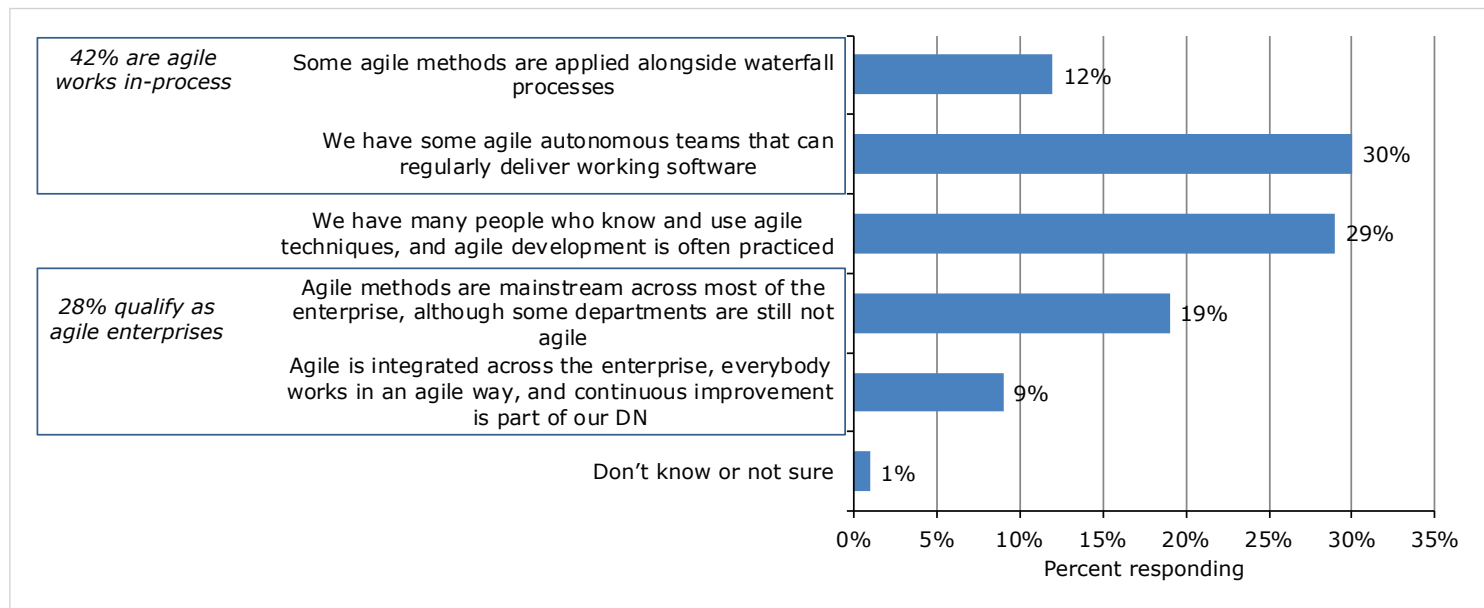


Figure 4: Agile Maturity



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Figure 5 presents two survey questions in the same slide. The first is which DevOps activities are taking place in the enterprise, and the second is to select

the top three activities based on the prior question. These two questions are presented side-by-side to see how well aligned they are.

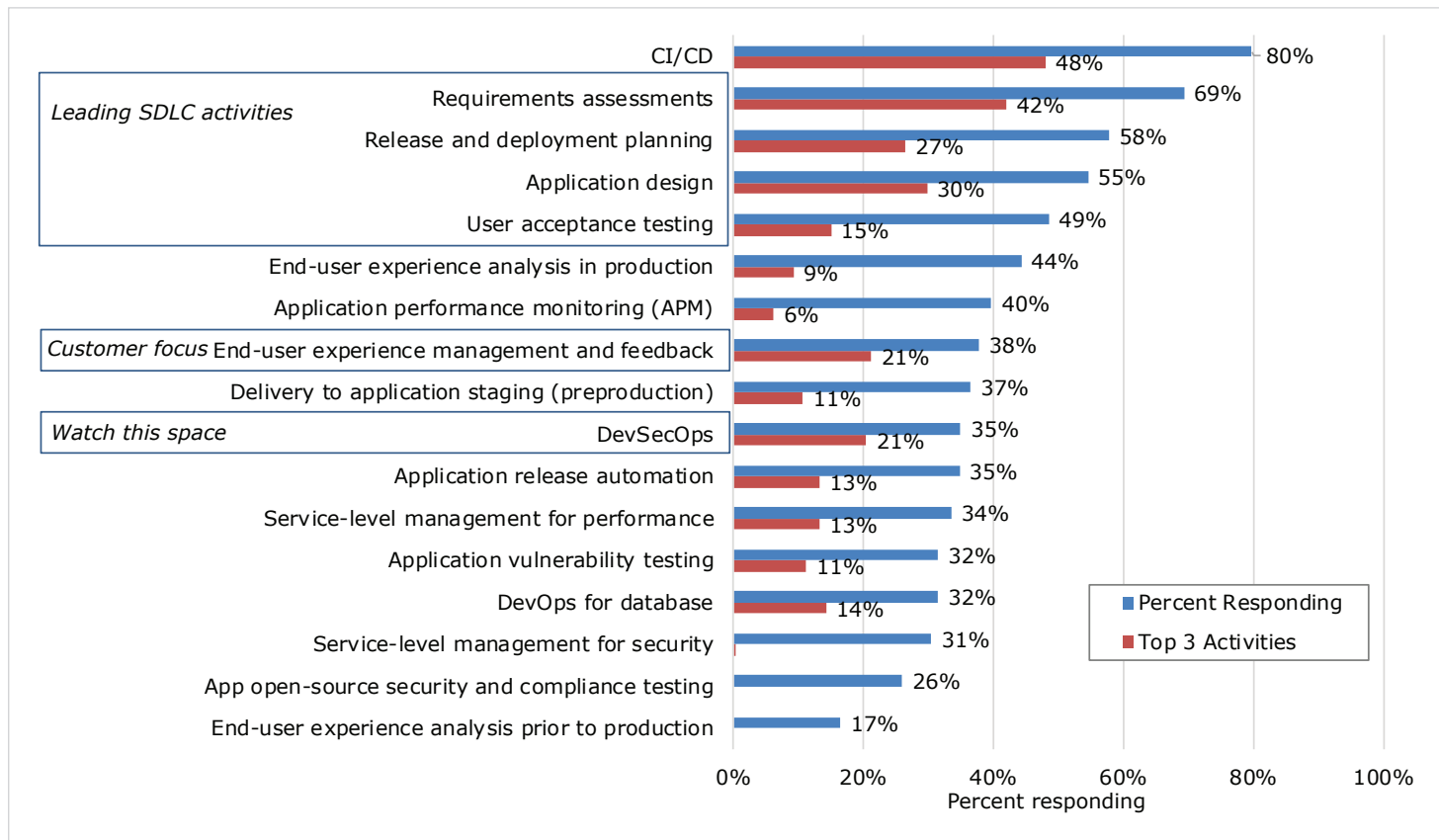


Figure 5: DevOps and Top 3 DevOps Activities

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In particular, there was nearly perfect alignment across the first four responses. CI/CD, requirements assessment, release/deployment planning, and application design ranked as the most important DevOps activities in the SDLC. This makes intuitive sense since users need to understand what is needed and what the design of the application should be, build the application, and get it deployed.

In Figure 5, responses five through eight are all testing-focused. While it is reassuring to see a wide variety of testing activities associated with DevOps, only end-user experience management had a strong top-three presence. It's good to see that ensuring customer satisfaction is a priority

for large enterprises. DevSecOps is also a priority for large enterprises, which indicates that companies are beginning to address a comprehensive approach to application security.

Figure 6 examines what is driving DevOps initiatives in the enterprise. Among the leaders were coping with/optimizing cloud opportunities at 60%, speeding and updating existing applications at 57%, improved OpEx efficiencies in IT at 57%, and finally moving to microservices and containers at 51%. None of these drivers seems particularly innovative. Instead, they reflect more of an emphasis on efficiency, productivity, and survival.

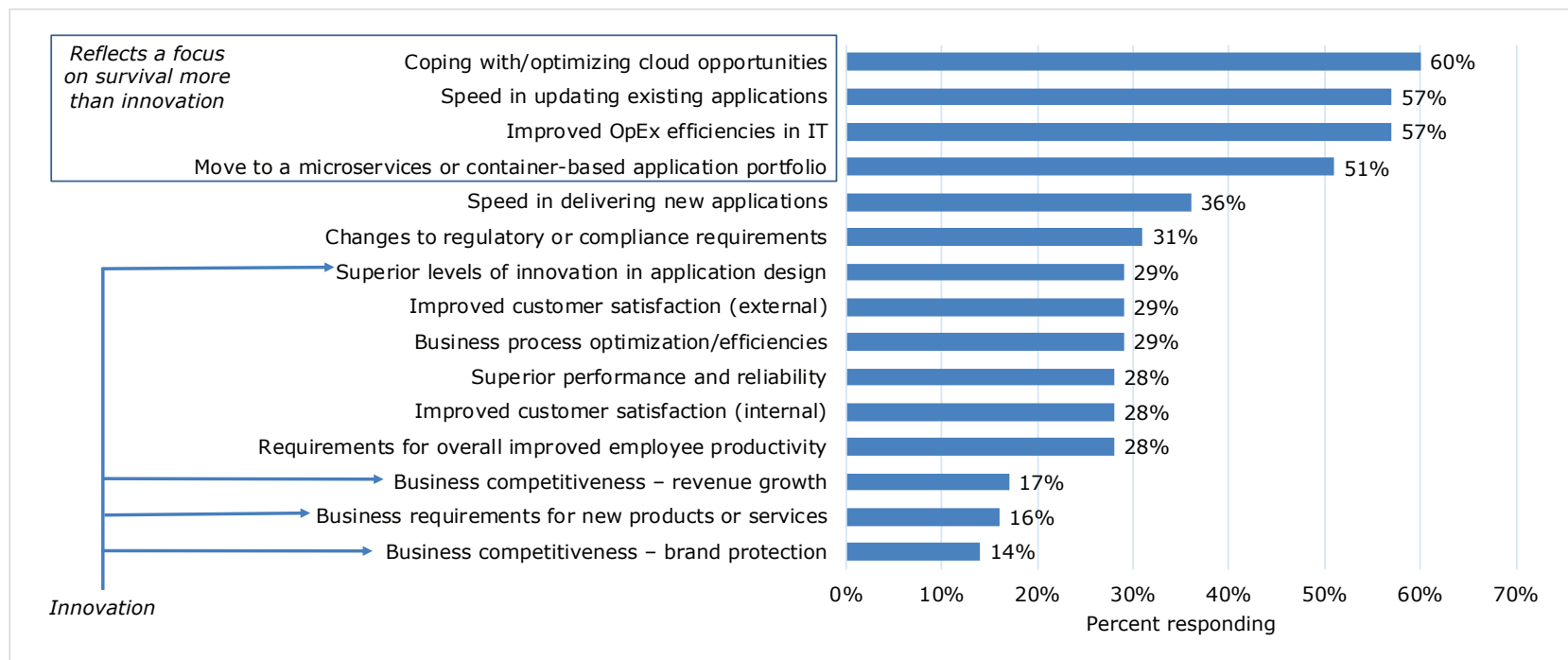


Figure 6: What is Driving Your DevOps Initiative?

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## Organization and Process Perspectives

Figure 7 shows the current status of centralized versus decentralized approaches to DevOps, with 67% showing strong progressions toward decentralization.

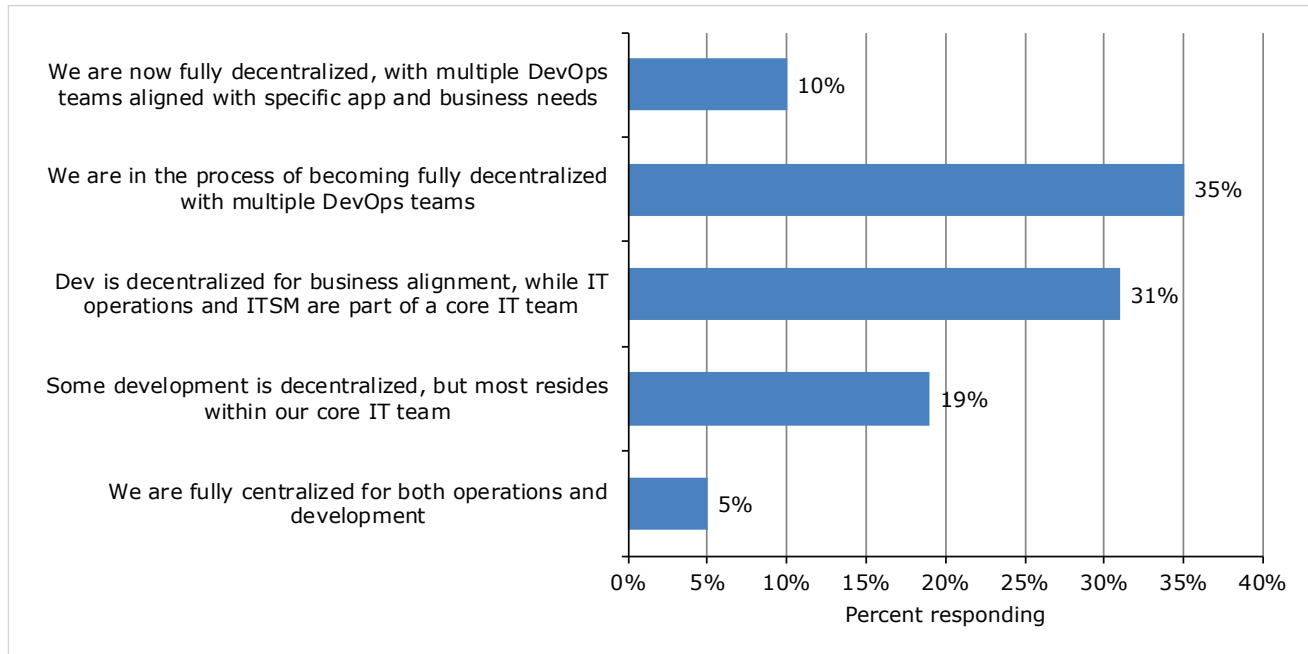


Figure 7: How Organizational Models for DevOps Have Changed

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This data underscores the trend toward decentralization, with 76% indicating a strongly decentralized development presence and 45%

indicating significant decentralization for overlaid, or more inclusive, DevOps teams.

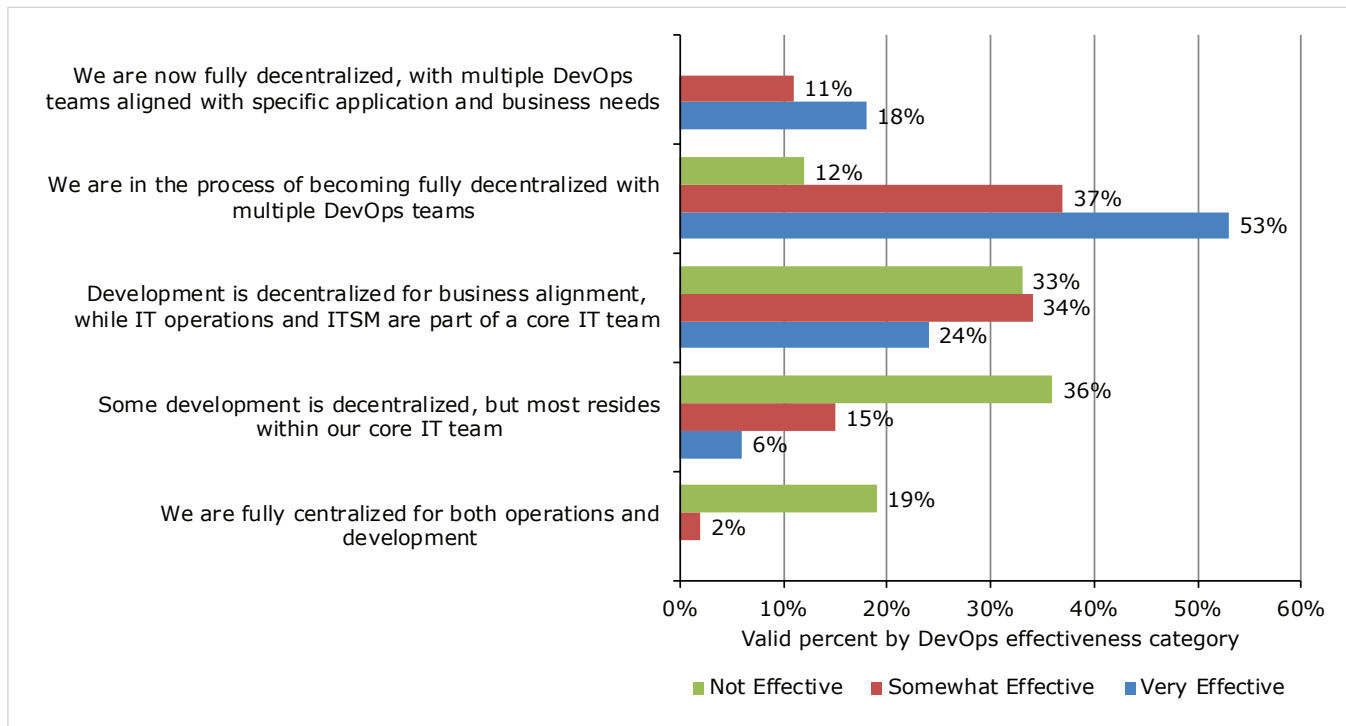


Figure 8: How Organizational Models for DevOps Have Changed

There is a very strong correlation between the trend toward DevOps decentralization and success in performance, relevance, and value (indicated

in blue, while green indicates least successful).



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## DevOps Team Interactions

The **development-to-operations** divide was a clear focus of this research overall. On a quantitative scale between *seamless* and *confrontational*, DevOps interactions were skewed toward the positive, with 46% leaning toward *seamless* and only 15% leaning toward *confrontational*.

Not surprisingly, those indicating more *seamless* interactions were clearly more progressive and successful. Just a few correlations here should help underscore this point. Those with seamless or near-seamless development-to-operations interaction were more likely to:

- Be more progressed in DevSecOps
- Show significant increases in the number of production application deployments per year

- Be more progressed in their commitments to digital transformation
- Have a higher volume of production-level application workloads in the cloud
- Be more invested in automation and IT analytics (AIOps etc.)
- More likely to be successful in terms of speed/time to deliver, performance, relevance, and value

Data also showed that DevSecOps was clearly on the rise, as shown in Figure 9. Only three percent of respondents indicated that they have no plans to integrate security/compliance and risk management into their DevOps initiatives.

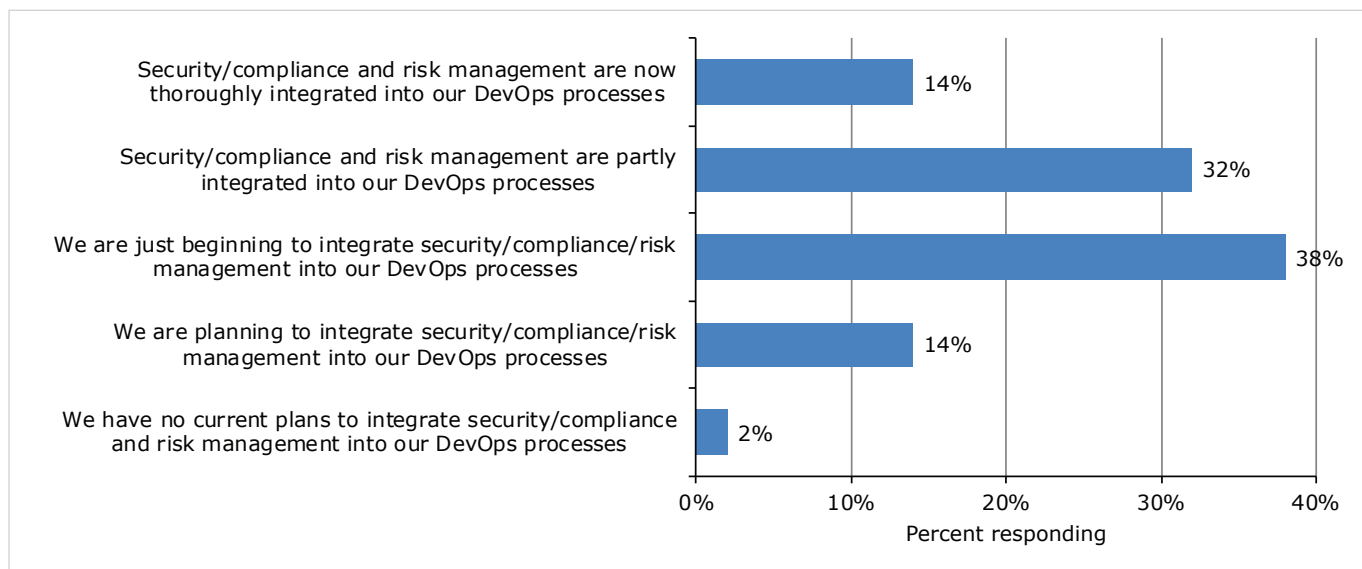


Figure 9: How DevOps Impacts Security/Compliance/Risk Mgmt

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## Productivity

Responses indicated an average of 57 distinct custom development projects completed annually. Thirty-one percent completed fewer than 25 custom development projects per year, and 22% completed more than one hundred. On average, respondents indicated completing 131 production releases per year, in which releases could be updates to preexisting development projects.

Then, when asked about whether their production deployments increased or decreased, responses strongly indicated an increase (81%), with only

15% claiming no increase or decrease and only 4% showing decrease. In fact, 46% indicated an increase of more than 20%.

Then EMA asked about the reasons for decreasing or static DevOps productivity, as experienced by 60 of the respondents. Conversely, what were the reasons for increasing DevOps productivity as experienced by the great majority of the respondents?

Figures 10 and 11 show the answers to those questions.

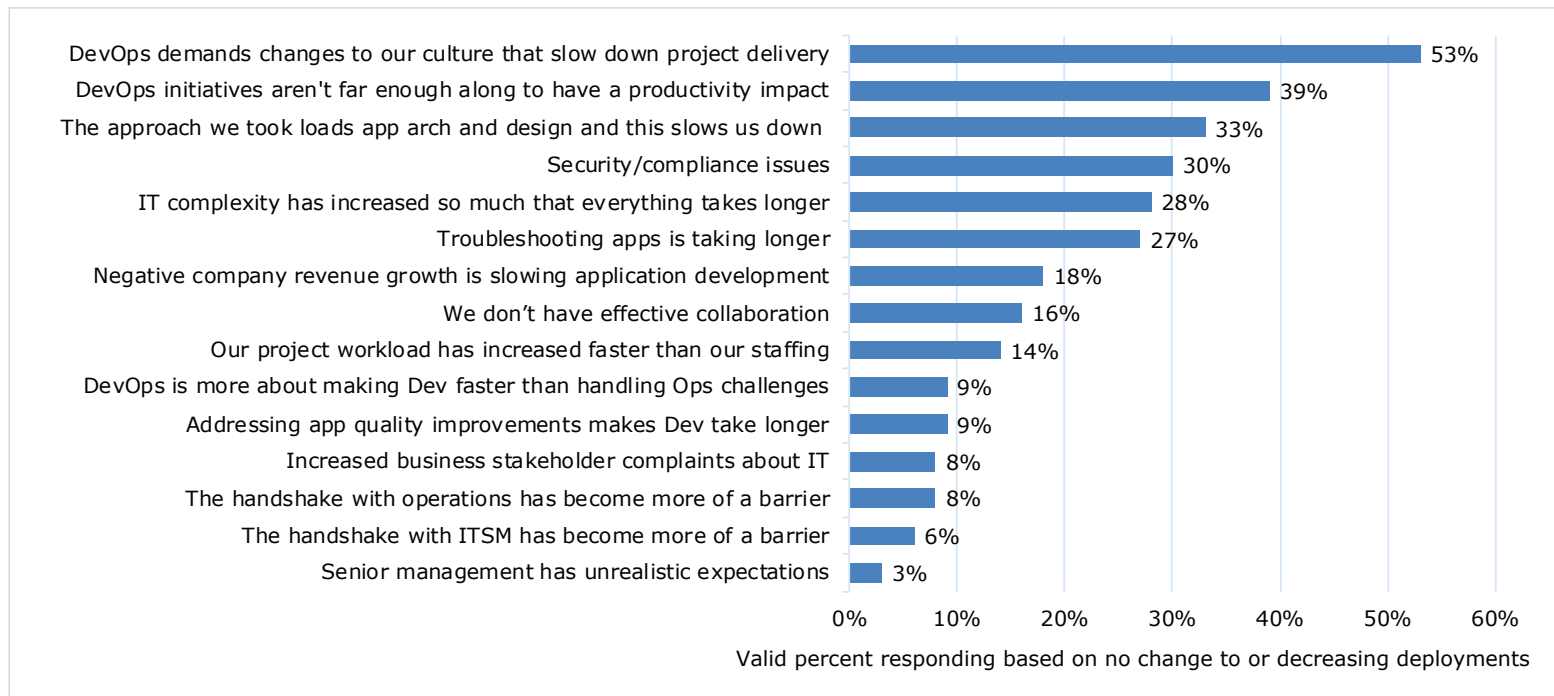


Figure 10: Reasons Why Production Deployments are Stable or Decreasing

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When asked about the reasons for decreasing productivity, DevOps pressure for cultural change was clearly the dominant factor, followed by DevOps

initiatives not being far enough along yet.

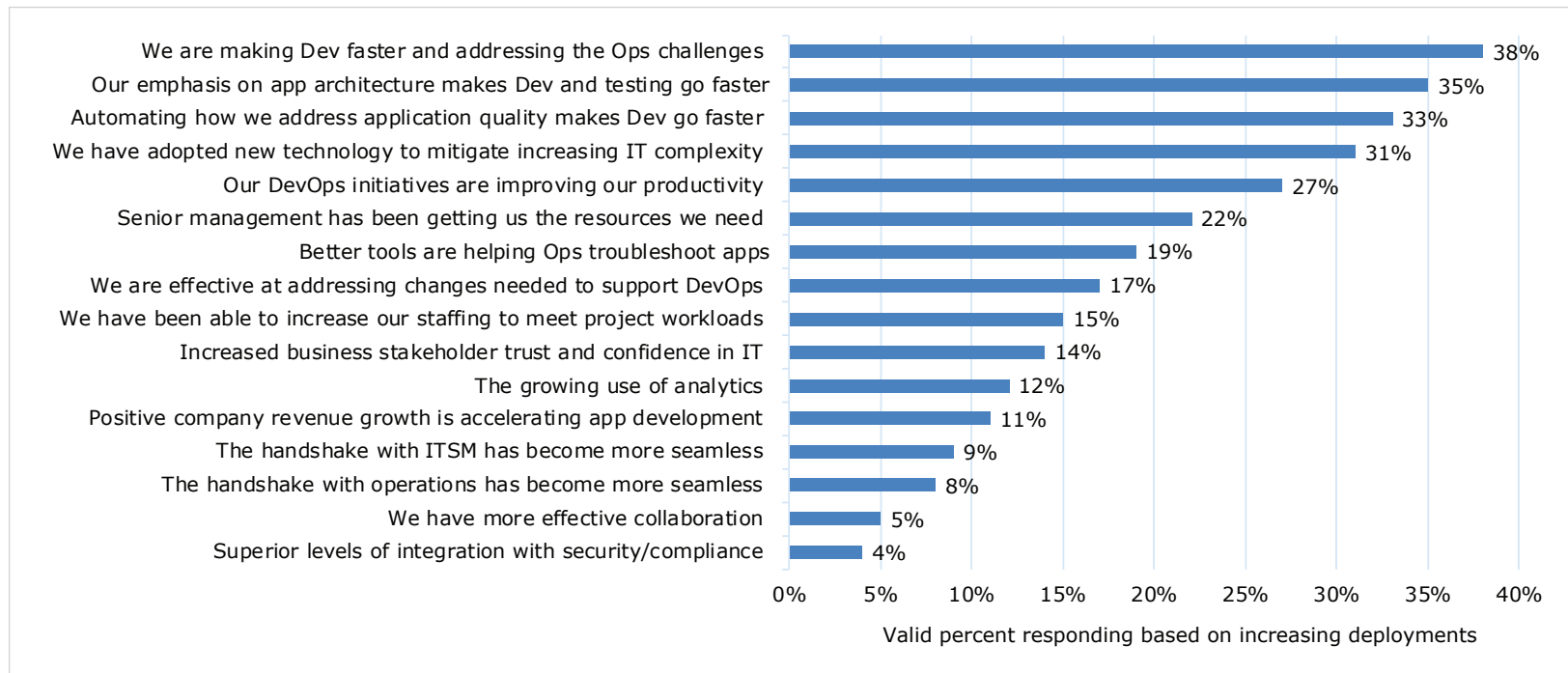


Figure 11: Reasons Why Production Deployments are Increasing

The number-one reason for increased DevOps productivity was becoming more effective in accelerating development, along with the handoff to

operations. The second leading factor was an emphasis on architecture and design that accelerated development and testing.

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## Application Performance in Production

EMA wanted to dive deeply into the full lifecycle issues surrounding DevOps, with a clear light application performance in production. Figure 12 strongly indicates that most IT organizations are still lingering with

siloes tools in operations and are therefore more prone to be reactive than proactive in how problems are resolved.

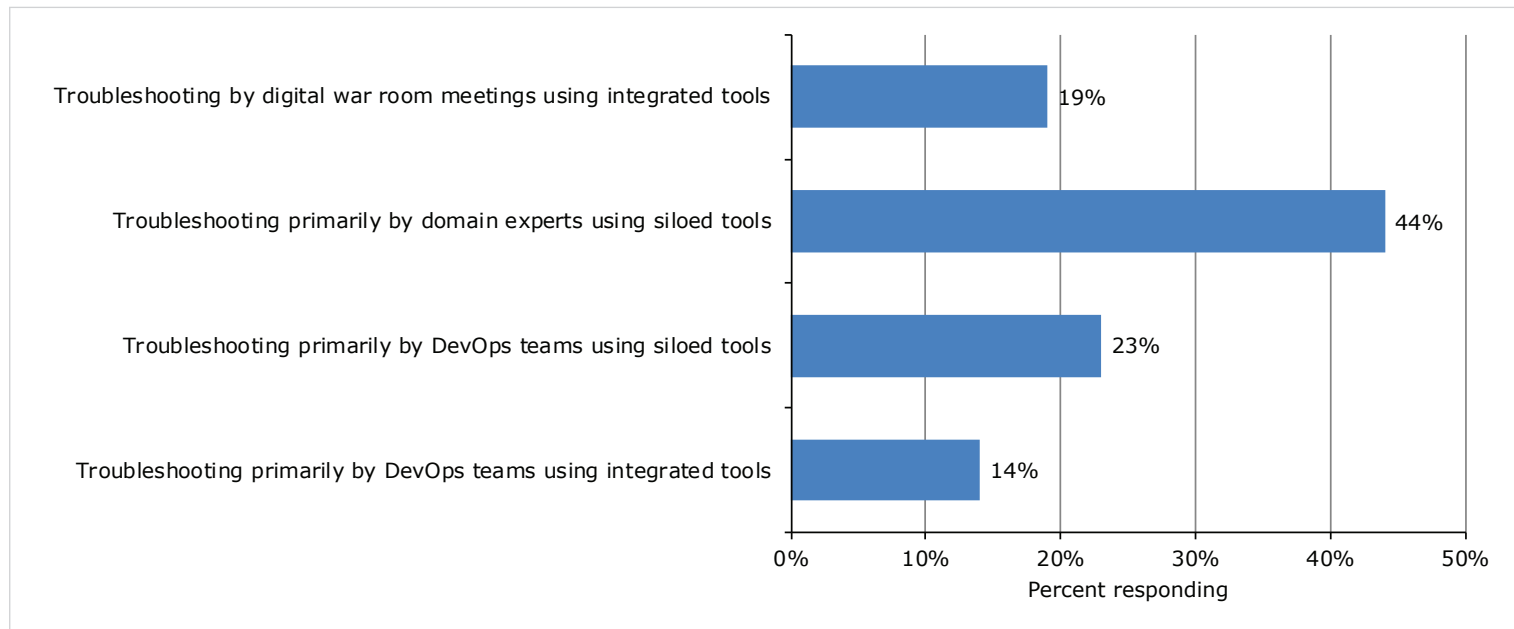


Figure 12: How Teams Solve Production Application Problems



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Nearly half of respondents, 44%, resolved application issues in production by domain experts using siloed tools. The next-most prevalent was development teams using siloed tools, but success affiliated most strongly with integrated toolsets in digital war rooms.

When EMA examined how these approaches mapped to outcomes, integrated toolsets in digital war rooms led for more progressive and successful outcomes, followed closely by integrated toolsets in development.

EMA also examined how DevOps teams and IT overall first learned about **application performance problems in production**. The data showed the following:

- Events and alerts (29%)
- Calls from users (28%)
- Trouble ticket notification (25%)
- Analytics/predictive insights (19%)

Not surprisingly, more progressive and effective DevOps teams showed higher ratios of *analytics/predictive insights*, as well as *trouble ticket notifications*.

In some other significant data, EMA learned that fewer than 40% of performance issues with applications in production were fully remediated, on average. Workarounds and restarts addressed the clear majority.

## *The DevOps/ITSM Handshake*

EMA recently conducted extensive research on IT service management evolution<sup>1</sup> showing how ITSM teams are expanding far beyond the service desk to include operations, applications management, development, and security stakeholders, among others. The research also underscored how strong investments in automation and analytics are, in fact, “reinventing” ITSM in many IT organizations.

DevOps research helps reinforce this trend by correlating overall DevOps success in value, performance, and relevance with effective levels of ITSM/DevOps integrations. When asked *how are your application release management activities integrated with ITSM?* EMA saw the following:

- We have had an established integrated release management process since before 2018 (14%)
- We recently implemented an established release management process in 2018 (15%)
- We intend to have an established release management process with ITSM in 2019 (41%)
- We have an ad hoc release management process with ITSM (19%)
- We have no formal release management process between development and ITSM (12%)

<sup>1</sup> EMA Research: “Automation, AI, and Analytics: Reinventing ITSM” April 2019.

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In other words, only twelve percent of respondents had no DevOps/ITSM handshake. When EMA compared them with the other groups, they were consistently the least effective, least likely to invest in analytics and automation, and overall the least progressive.

Figure 13 shows how DevOps teams are integrating with ITSM in a variety of ways, with common workflows and leveraging CMDB/CMS capabilities for actively provisioning preproduction environments both clearly in the lead.

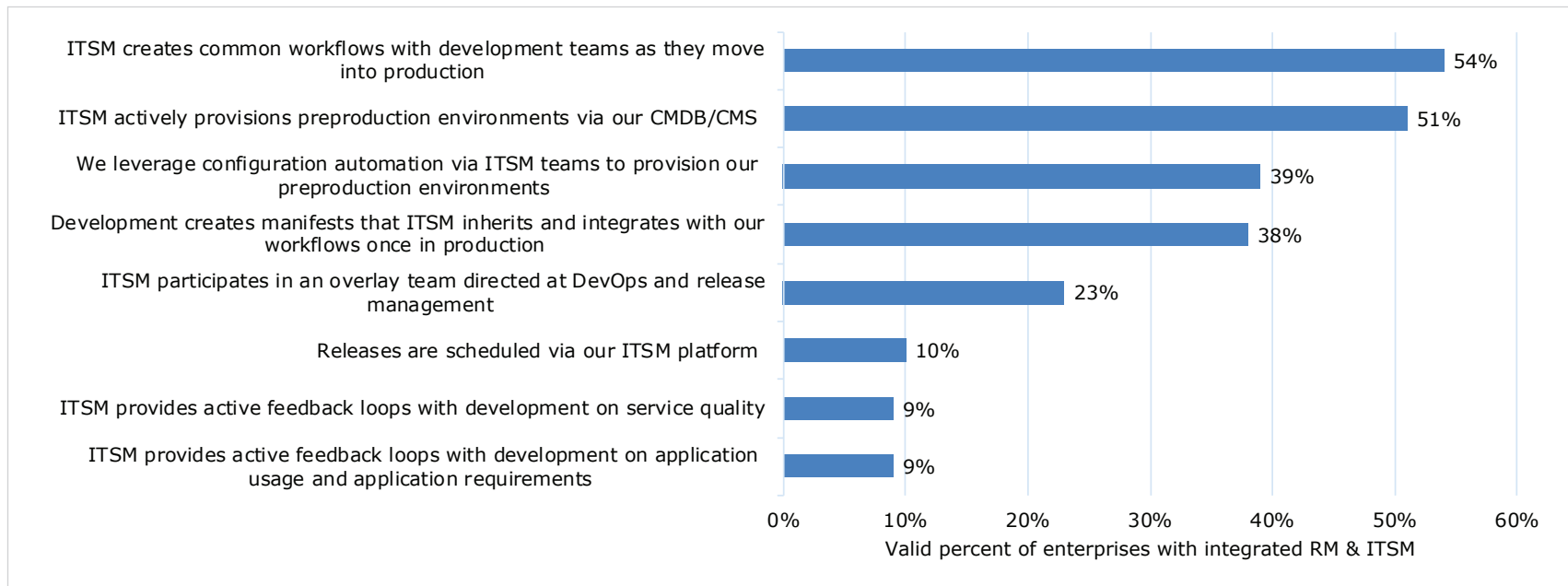


Figure 13: How Release Management is Integrated Into ITSM

The DevOps/ITSM handshake is real and multidimensional, with common workflows and CMDB/CMS preproduction provisioning leading the charge.

When asked about **the types of applications that can bypass ITSM**, EMA saw the following:

- None (55%)
- Configuration changes that require no coding (17%)

- Internal informational applications that are read-only (20%)
- Don't know/not sure (19%)

Significantly, those that stated no application types fully bypassed ITSM were also most likely to be more effective in outcomes and more progressive in technology adoptions in analytics and automation.

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## Technology Priorities

EMA wanted to explore the impacts of DevOps on toolset priorities and outcomes in detail, including those on both sides of the DevOps divide. In general, adoption of more toolsets across the full lifecycle, including performance monitoring, led to more successful and more progressive

outcomes in areas such as digital transformation, analytics, and automation adoptions.

Figure 14 shows the toolset categories that were directly in use in support of application lifecycle activities.

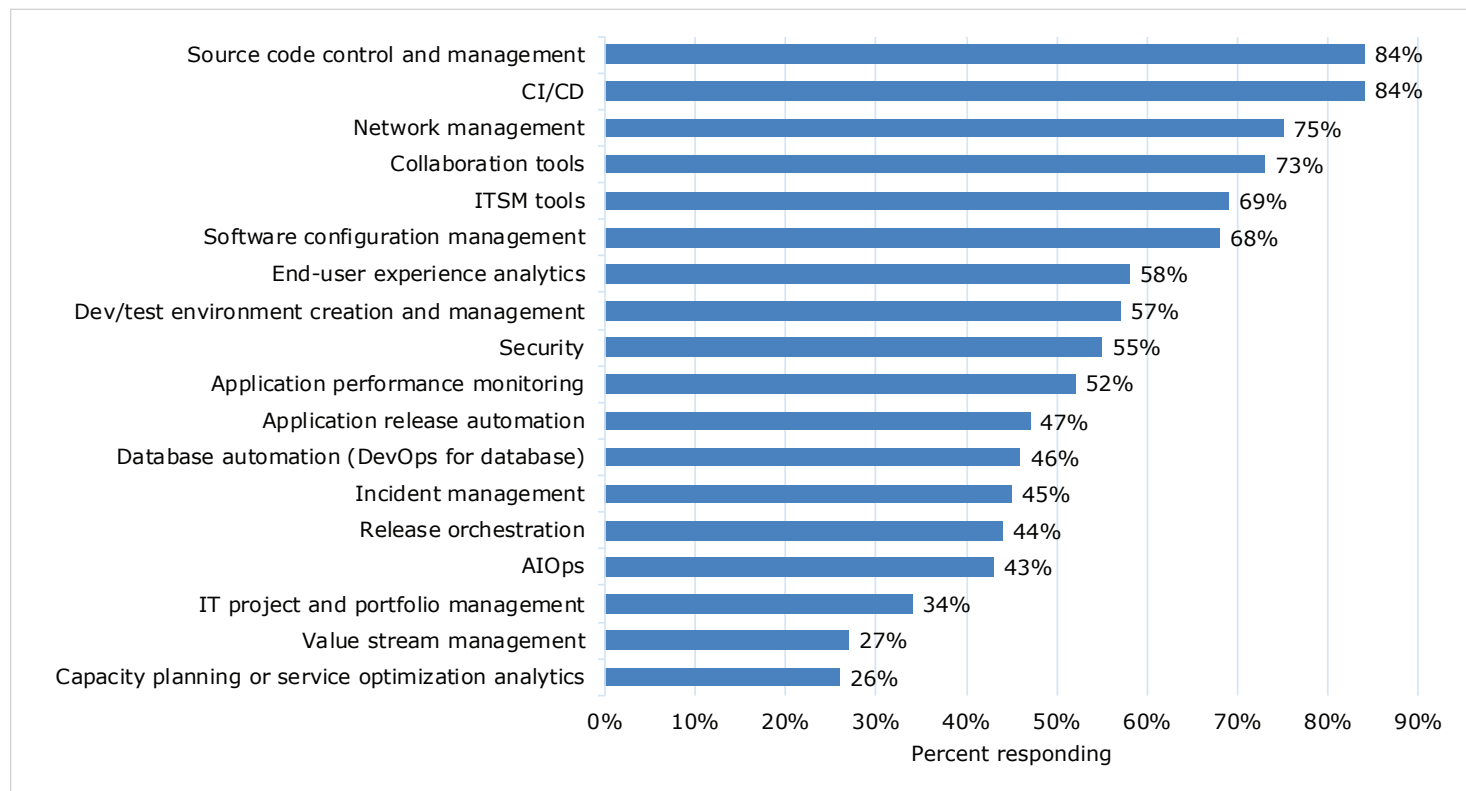


Figure 14: Tools Used in Support of Lifecycle Activities

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Source code control and management tied with CI/CD as leading lifecycle toolset categories, with network management coming in third. On average, respondents used 10.6 different lifecycle toolset categories.

However, when EMA asked what the most critical technology gaps across the DevOps divide were, EMA saw the following top five:

- Application performance monitoring (APM) (46%)
- End-user experience analytics (26%)
- Network management (24%)

- Collaboration capabilities (24%)
- ITSM tools (22%)

As should be clear from these percentages, APM clearly remains an area that requires more advanced capabilities among respondents, in part, no doubt, because of the need to monitor a wider range of application architectures—including microservices and containers—across the hybrid cloud.

Figure 15 dives more deeply into application performance monitoring requirements by asking what was currently in use.

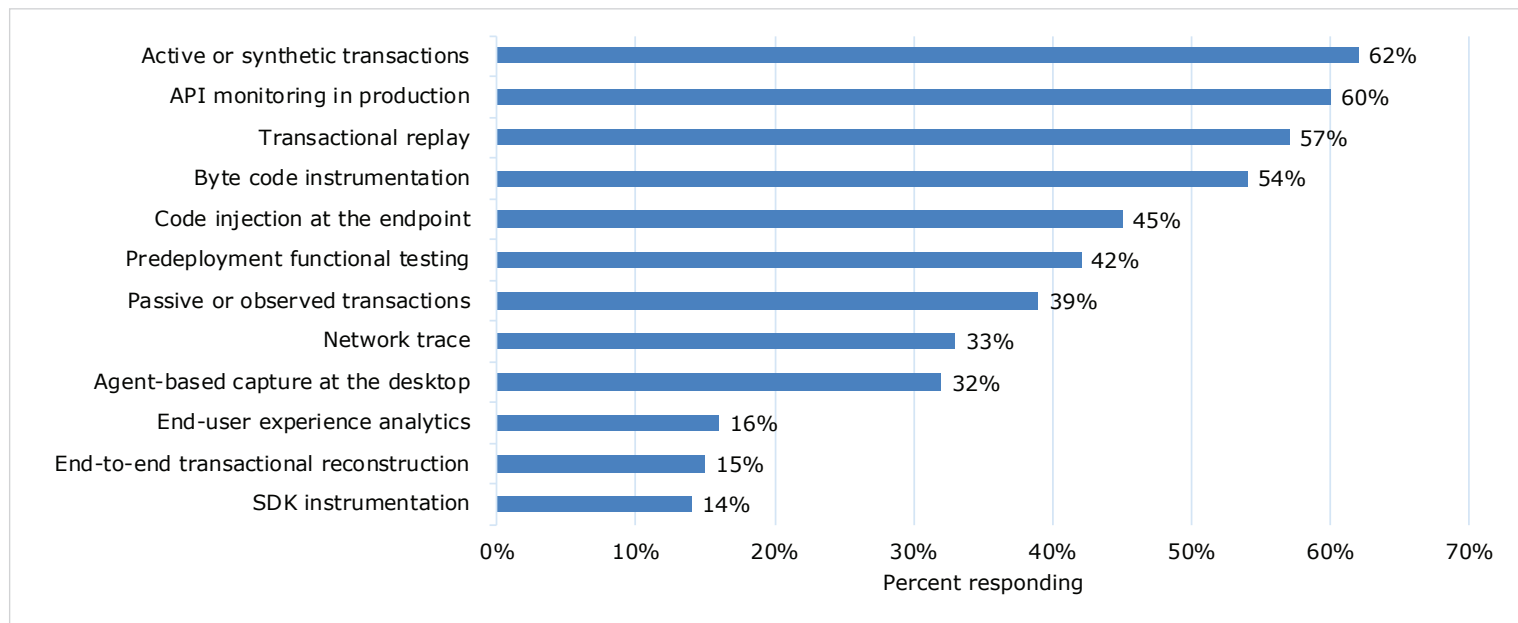


Figure 15: Technologies Used for Application Performance Monitoring

When diving more deeply into application performance monitoring requirements, synthetic transaction, API monitoring, and transactional replay were those most prevalently in use, with an average of 4.69 technologies in play.

Once again, more successful and progressive IT organizations had significantly more APM solutions in play than those that were least effective.



# Optimizing DevOps Initiatives: The View From Both Sides of the DevOps Divide

## Analytics and Automation

Fifty-five percent of respondents indicated that AIOps or advanced IT analytics were *extremely important* or *very important* in supporting DevOps initiatives. Another 33% viewed analytics as *important*. Only 7% viewed advanced IT analytics as *not important*. Not surprisingly, those with strong commitments to analytics strongly outperformed those who saw analytics as less important, or not important. This was true across many areas,

including overall DevOps efficiencies and effectiveness, as well strategic areas, such as more progressed digital transformation and stronger support for DevSecOps.

Figure 16 illustrates how analytics can come into play in support of DevOps initiatives.

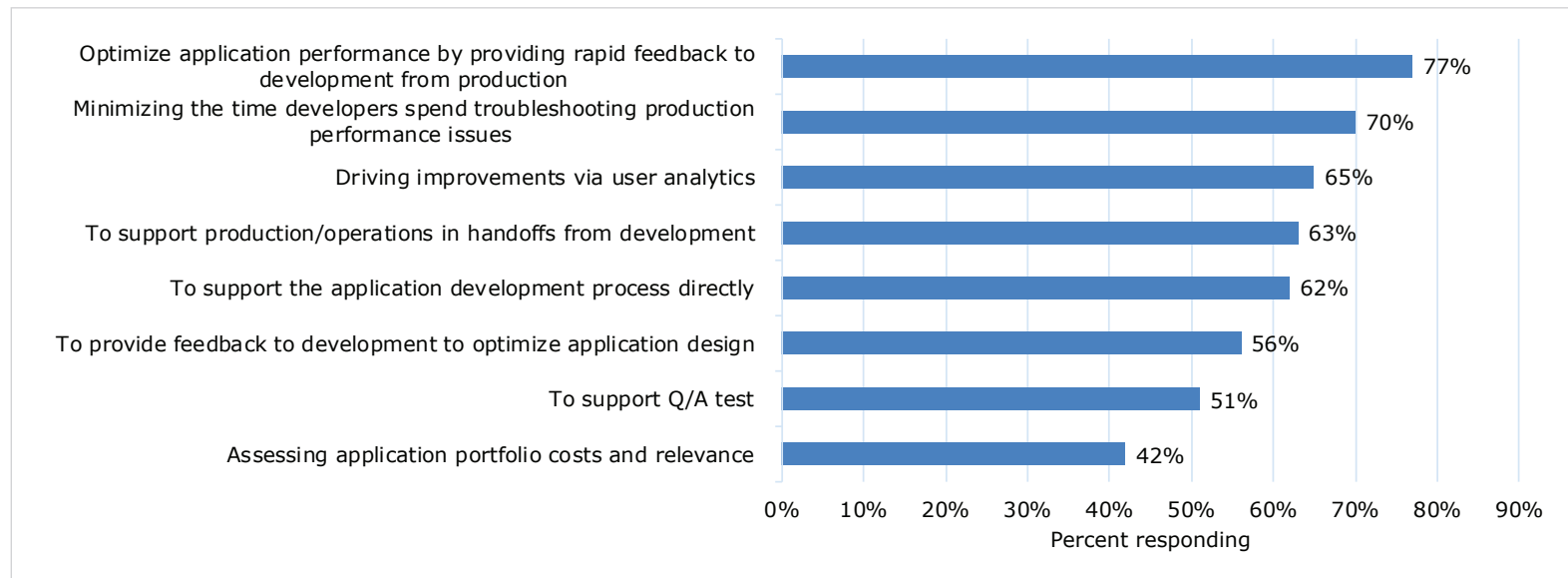


Figure 16: DevOps Priorities for Leveraging IT Analytics

Priorities for leveraging IT analytics in support of DevOps initiatives showed a leading role for optimizing application performance with feedback to development in production, followed by minimizing the time that developers spend troubleshooting performance issues. Responses indicated that IT organizations leveraging analytics for DevOps had an average of 4.86 priorities.

One takeaway from the data is that while future-looking DevOps teams are certainly leaning toward a more informed role for development, that role should remain centered in creating effective and needed services, rather than having to remediate issues that surface in production.

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Automation was another clear area of focus, one that's already central to any descriptions of how DevOps is evolving or needs to evolve. When asked about its importance, not surprisingly, respondents were even more emphatic than they were about analytics/AIOps. According to the data, automation was:

- Extremely important (39%)
- Very important (30%)
- Important (19%)

- Somewhat important (8%)
- Not important (4%)

Once again, automation clustered in many respects as a mirror image to analytics in terms of relevance to overall DevOps effectiveness.

Figure 17 shows the range of automation technologies in use for DevOps, as well as DevOps priorities in automation.

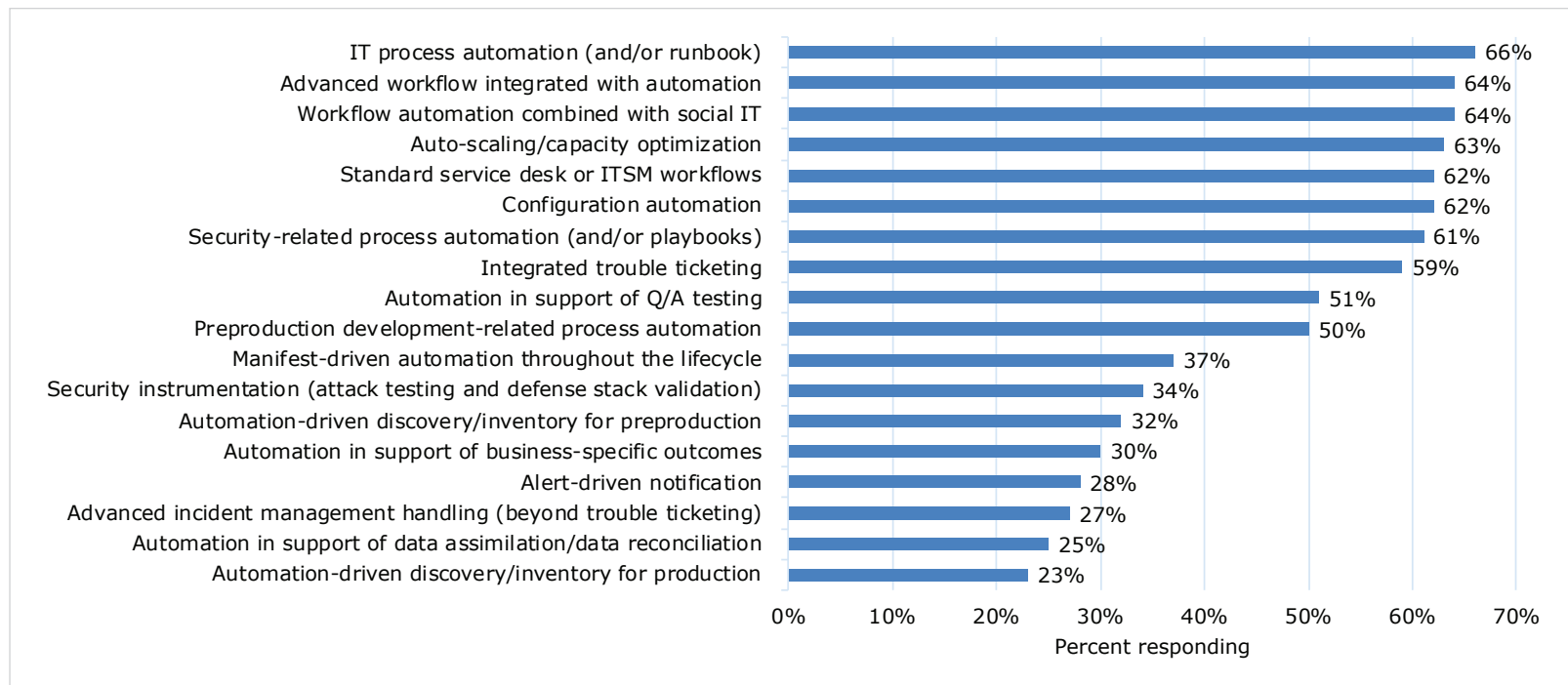


Figure 17: Workflows and Automation in Support of DevOps Initiatives

Advanced workflow integrated with automation, IT process automation, and auto-scaling capacity automation led for DevOps-related automation

currently in use or planning for use. Responses indicated that, on average, DevOps initiatives are leveraging 8.38 different automation technologies.

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## Obstacles and Recommendations

This section discusses where DevOps solutions and teams are least effective and includes a self-assessment of DevOps effectiveness and DevOps best practices.

Figure 18 identifies where DevOps solutions are least effective. Responses were widely distributed across the 20 responses that were offered.

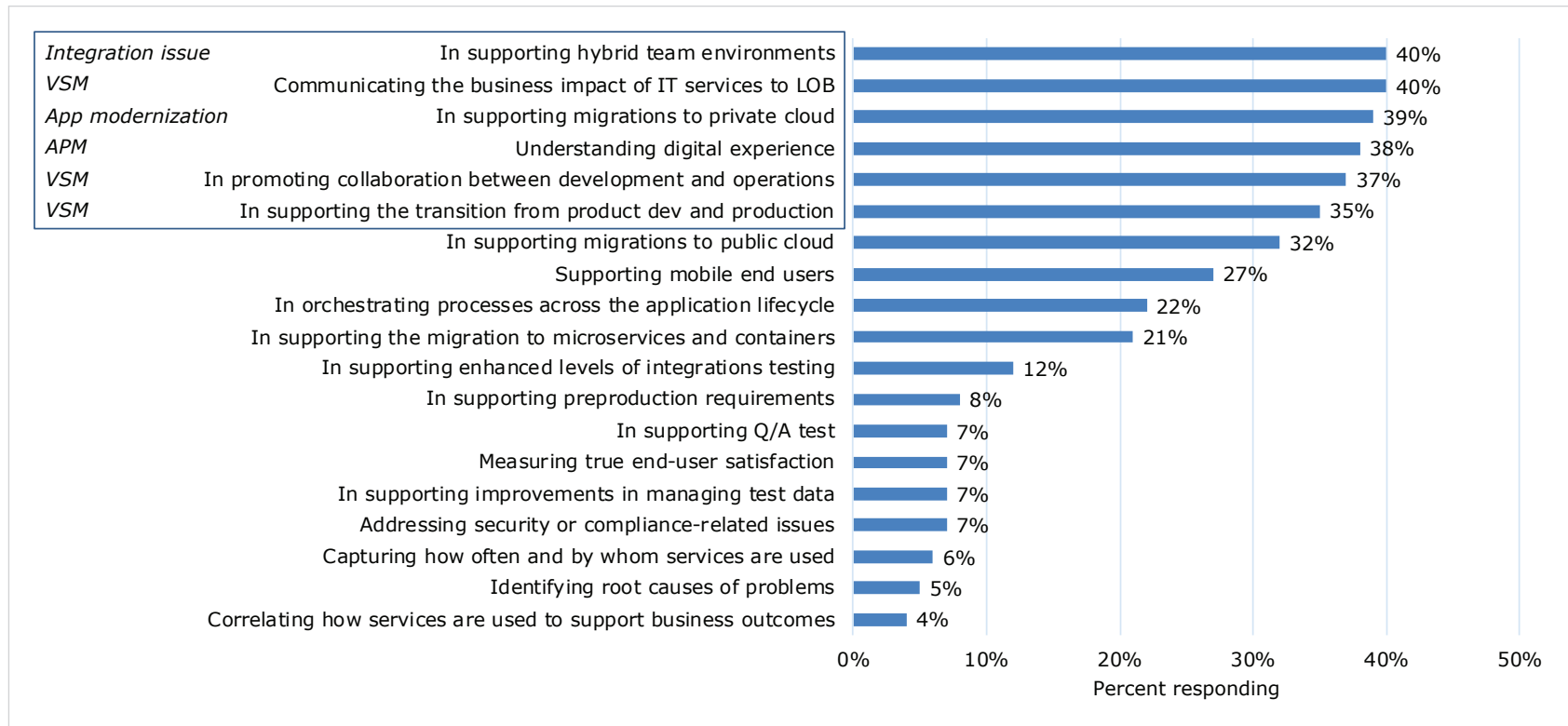


Figure 18: Areas in Which DevOps Solutions are Least Effective

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One leading area in which DevOps was least effective was supporting hybrid team environments. This is a legitimate complaint on the part of large enterprises. Most DevOps tools were originally architected as point solutions and then ported to other environments. Therefore, most of these tools lack an API abstraction layer to provide heterogeneous interoperability out of the box. This is beginning to change, but the highly fragmented, rapidly changing, and competitive nature of the DevOps market make it hard to support hybrid teams.

Tied with supporting hybrid team environments was communicating the business impact of IT services to the line of business, also identified by 40% of enterprises. IT struggles in reporting the business impact of their services

to the line of business because IT all too often only measures, monitors, and manages assets that are relevant to the IT domain.

The third-ranked area in which DevOps solutions were least effective was in supporting the migration to private cloud/virtualized environments, as identified by 39% of enterprises. Many vendors, including virtually every cloud service provider, have a portfolio of migration and modernization tools and strategies to address this need. Because the decision criteria are complex and vary by application/system, the best approach is to look for vendors/service providers that offer support for the cloud targets of interest, as well as a structured framework for evaluating how best to move key parts of their application portfolio forward.

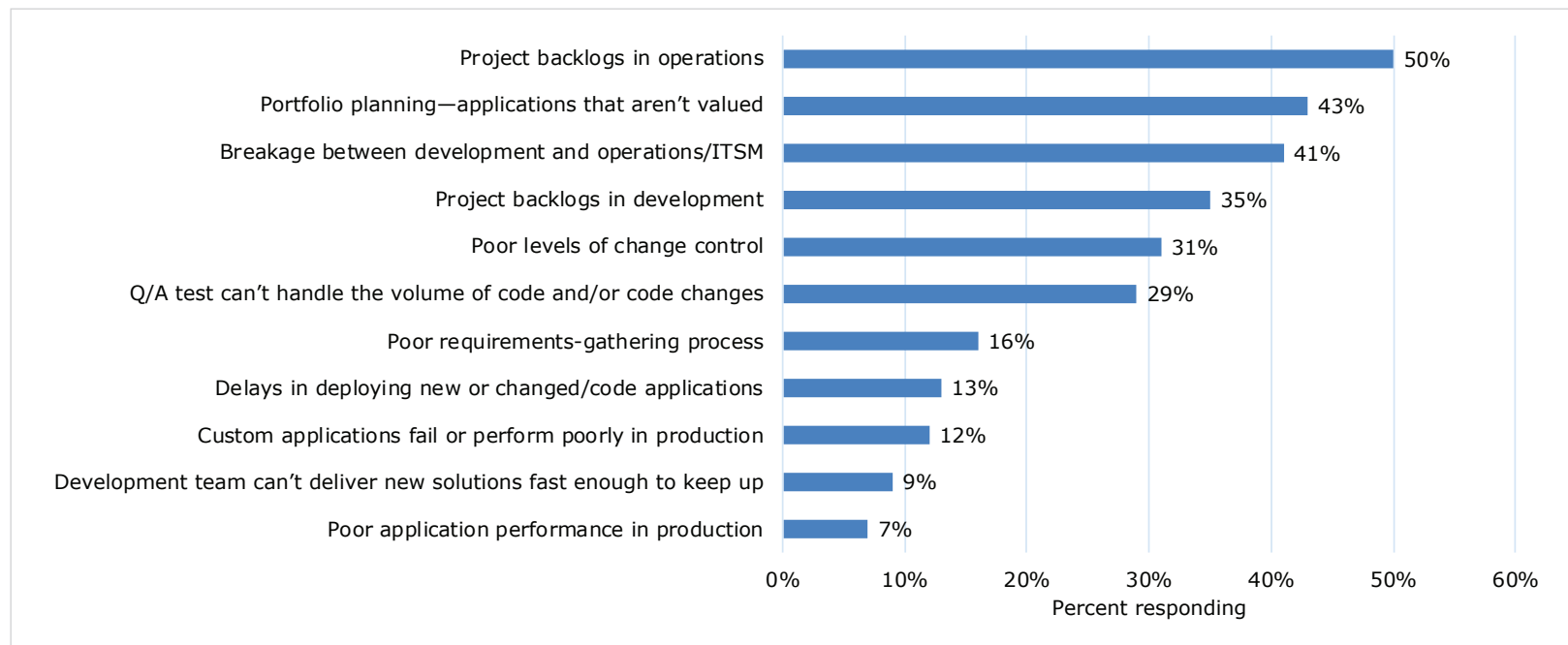


Figure 19: Areas in Which DevOps Teams are Least Effective

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The leading area in which DevOps teams were least effective was in addressing project backlogs in operations, identified by 50% of enterprises. Many factors can contribute to the situation. Disposing of technical debt identified by operations requires close coordination with development. This issue represents a DevOps perfect storm fueled by challenges across integrating and coordinating people, processes, and technologies between Ops and Dev.

The next leading area in which DevOps teams were least effective was in portfolio planning, where IT is out of sync with real demand and value (identified by 43% of enterprises). Value stream management would appear to be an effective solution to remediate this challenge. Because VSM evaluates value streams across their entire lifecycle, from a business perspective it becomes very difficult for IT to set the wrong priorities.

User experience and customer experience analytics can also be central to resolving this when they include strong behavioral analysis, business impact and outcomes, and well-defined usage insights.

The third leading area in which DevOps teams are least effective is breakage in the handoff between development and operations/ITSM. In many cases, failures occur when moving to production because the stack deployed is inconsistent with the stack required. Resolving this issue necessitates a careful evaluation of people and their roles, processes, and tools.

Figure 20 identifies DevOps best practices. This was a single response question, which meant each enterprise needed to identify the activity that was most important.

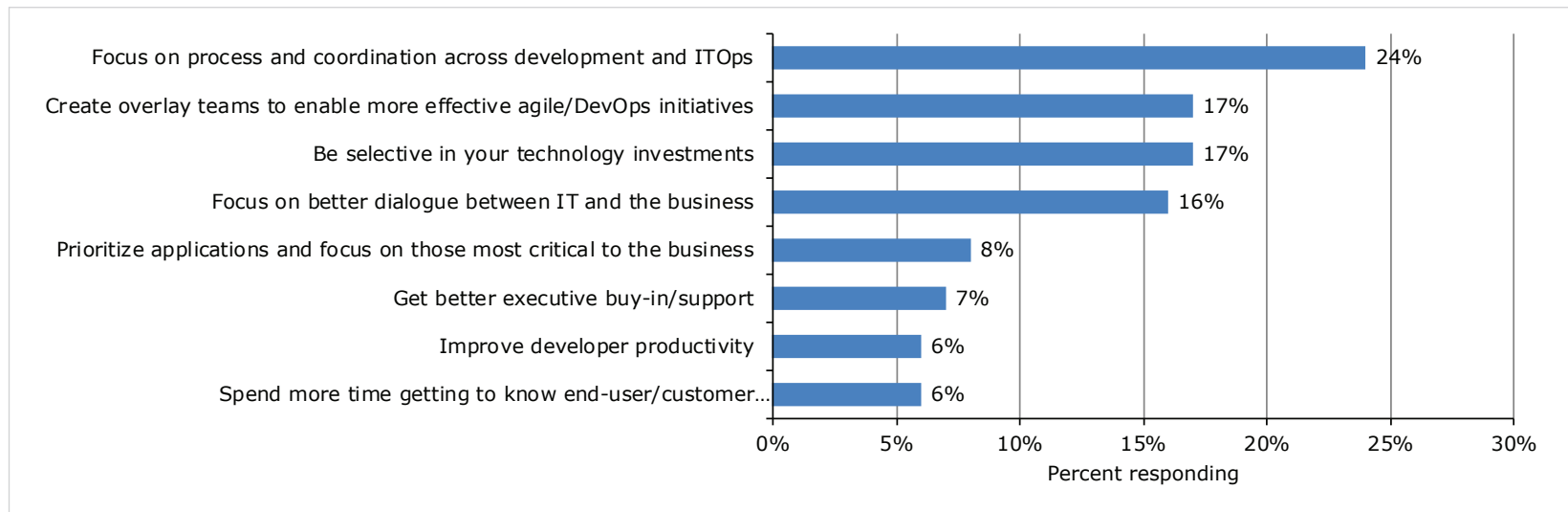


Figure 20: DevOps Best Practices

The leading recommendation identified in Figure 20 was to focus on process and coordination across development and ITOps, identified by 24% of enterprises. This is a recurring theme across many of the figures in this report.

In some cases, this was voiced as a more seamless transition from development to production, and in other cases it was described as resolving IT lifecycle planning and management problems or supporting hybrid team environments.



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## Segmentation by DevOps Effectiveness

Figure 21 evaluates DevOps best practices by DevOps effectiveness. Responses to this question were sorted in descending order based on enterprises that were most effective in agile and DevOps. There is commonality and overlap in the most effective and least effective enterprises in areas including a focus on better dialogue between IT and the business, creating overlay teams to enable more effective DevOps initiatives, and seal activity in technology investments. These areas represent best practices that have strong significance to enterprises that transcend DevOps effectiveness.

However, the least effective enterprises in the sample are fixated on implementing a process for coordinating development and operations

activities, as well as improving developer productivity. These are predictable choices for enterprises that are early in their DevOps journey.

Conversely, enterprises that are most effective at DevOps have adopted a more nuanced approach to DevOps that includes getting better executive buy-in, prioritizing applications and focusing on those most critical to the business, and spending more time getting to know end-user customer behaviors and perspectives. This shows a certain maturity in the DevOps lifecycle of enterprises that were most effective at DevOps and a focus on strategy and innovation that will serve these enterprises well.

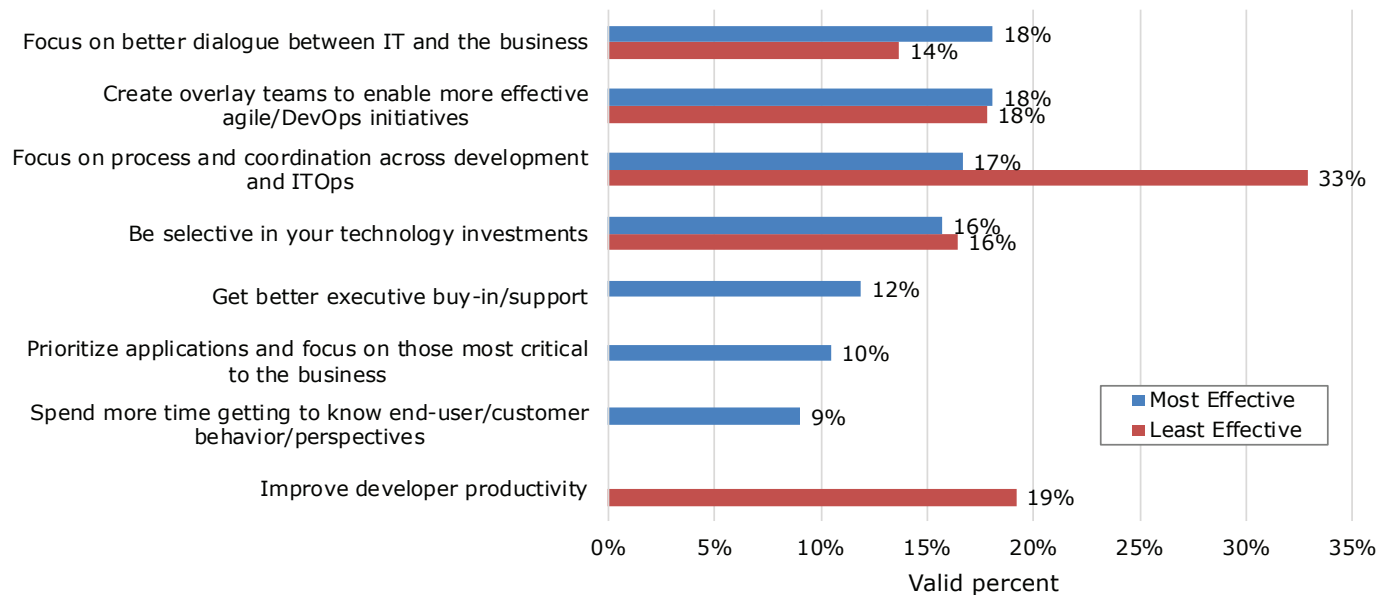


Figure 21: DevOps Best Practices by DevOps Effectiveness

# Optimizing DevOps Initiatives: The View From Both Sides of the DevOps Divide

## Conclusion

This research seriously reinforces the need for a more progressive approach to DevOps that's neither siloed nor technology-resistant. It also strongly confirms the need to make DevOps more inclusive of multiple groups across IT, rather than simply being the sacred cow of a narrowly defined technology elite. That isn't to say that new roles aren't emerging, such as SREs, that can help clarify and accelerate the DevOps process across more holistic and integrated IT teams. That leadership, and the associated innovations, need to be shared across an overall more advanced IT population for DevOps to become more effective, not only in speed, but also in relevance, performance, and business value.

The extensive and overlapping collection of questions that comprised this survey point to two critical areas identified by large enterprises as crucial to DevOps success. The first is resolving the bidirectional handoff between Dev and Ops. This was expressed in a variety of ways, but goes to highlight the lack of process, tooling, and automation that surround a move from development to staging and to production. It also shows the process for resolving technical debt identified by Ops and ITSM. There is precedent for moving from development to production from people, process, and technology standpoints, so this problem has a solution in reach. However, addressing technical debt identified by ITSM requires a somewhat more creative and nuanced conversation between development, operations, and the business to identify priorities.

The second critical issue identified by enterprises as crucial to DevOps success is establishing a meaningful way to communicate and work with LOBs. This issue surfaced in multiple ways (as a DevOps problem, an area where DevOps was least effective, and as a DevOps objective). In these cases, value stream management is a preferred solution. This is because each value stream is managed from the perspective of utility to the customer and

across the entire lifecycle of the value stream. By embracing measurements and management of value streams in this way, IT aligns itself with the needs of the business and steps away from its internally-focused IT asset management mode of operation.

Another factor in IT-to-business alignment, as well as in providing a more effective context to bridge the Dev/Ops divide, is shared user and customer experience analytics. The ability to capture behaviors, effectiveness, business impact, and usage can inform business and IT stakeholders with common data references, while also providing a context for development, operations, and ITSM to work more effectively together.<sup>2</sup>EMA research indicated that user and customer experience data can inform on everything from application design to training needs, to changes in business processes and customer outreach.

In essence, both value stream management and user and customer experience analytics can help unify IT and bring IT together with business stakeholders—while reinforcing the criticality of inclusion. Success rates are an indicator of this need for “inclusion” since they strongly reflect more positive interactions between development and operations, commitments to best practices, more evolved integrations with ITSM teams, more defined activities across the entire enterprise DevOps pipeline, and a wider range of interactions between development and the rest of IT. That these attributes should correlate so strongly with more progressive technology adoptions in areas such as automation and analytics is also telling. The message above all is that the most progressive form of DevOps isn't “NoOps” (or the minimization of a role for operations), but rather a transformative model of technology adoption, process, and by implication even mindset, across all of IT.

<sup>2</sup> “EMA Research: User, Customer, and Digital Experience: Where Service and Business Performance Come Together” February 2017.

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### Corporate Headquarters:

1995 North 57th Court, Suite 120

Boulder, CO 80301

Phone: +1 303.543.9500

Fax: +1 303.543.7687

[www.enterprisemanagement.com](http://www.enterprisemanagement.com)

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