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# Automation, AI, and Analytics: Reinventing ITSM

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# Table of Contents

Executive Introduction .....	2
Demographics and Organization .....	6
AI/AIOps and Analytics .....	6
Looking at Actual Deployments for AI and Analytics .....	7
Automation.....	8
Virtual Agents and AI Bots .....	11
Success Factors .....	12
Enterprise Service Management (ESM).....	13
Conclusion.....	15

## Executive Introduction

EMA research consistently tracks IT service management (ITSM) as a hub of digital transformation and change. What's new are the ways artificial intelligence (AI), automation, and analytics are redefining ITSM's role in business innovation, services, and organizational reinvention. Although potentially game-changing, these advances are not challenge-free. Technological complexity, functional understanding, resource allocation, and simple resistance to change all exert a drag on adoption.

Part of the challenge comes from confusion around the technologies themselves, since vendors and practitioners often use terminology at will for very different functions.

**Automation:** Service organizations look for ways to exploit the value of AI bots, virtual agents, and a range of analytics-driven automation within the context of existing investments in ITSM platforms, systems, workflows, IT processes, and automations already in place.

**AI and analytics:** The broad scope of AI crosses topics such as virtual agent bot-like automation, AIOps, machine learning (ML), predictive advice, and big data lakes. Without a clear understanding and adoption path, ITSM teams are often to reluctant to trust and maximize the potential of AI.

EMA designed this research, "Automation, AI, and Analytics: Reinventing ITSM," to investigate the relationships between the near-universal business demands of digital transformation and the wealth of enabling technologies as they converge on the widening discipline of ITSM. Starting with the service desk as a central point of departure, the research took a use-case look at the state of AI and predictive analytics advances applied to incident and request service, problem resolution, support automation, and broader levels of enterprise service management (ESM).

The goal of the research was to provide a practical basis for providers and parties interested in ITSM to define and promote investments in automation, AI, and analytics. The lens EMA used sought to understand the appetite, adoption, maturity, and near-term plans for these technologies and their transformational potential.

### 400 global respondents (64% VP through C-level) active in ITSM explored such areas as:

- Digital transformation and other sea changes increasingly blur the line between IT and the business, so ITSM has to change. What does that change look like? How much of it is evolutionary or organic, and how much is truly transformational?
- How is ITSM changing to stay relevant and effective in a dynamic business environment? What are the primary technical and organizational requirements? Are resources tending to increase centralization/federation, or are they being decentralized/dispersed across the enterprise? Is there a shift in the skillset needed to serve a more diverse audience that spans IT and business demands?
- What role does ESM play in the adoption of automation and AI, or are those technologies paving the way for extended services? How pervasive is ESM today? Is it an extension of ITIL processes, a set of customized enterprise workflows, or a common-sense mix? Is it a new enterprise play, or is it an evolutionary adaptation with a newly recognized market value?
- The confluence of AI and analytics with automation capabilities has made certain types and levels of service possible in ways that were not previously possible. What are the primary use cases, drivers, obstacles, and actual benefits achieved?
- What is the level of understanding about the different types of AI and analytics? What is the current and desired state of applying AI/analytics to automation? What are the adoption patterns, organizational impacts, ownerships, best practices, success rates, and impacts on ITSM? Who owns the budget, headcount, and processes? How is that changing?

## High-level AI/analytics and automation findings

Some of the research findings on AI/analytics and automation include:

- 62% of respondents indicated that they were moving toward an enhanced level of ITIL adoption. Enhanced levels of ITIL adoption strongly correlated with success in AI/analytics and automation adoptions, as well as more advanced use of AI bots and virtual agents.
- IT productivity, cost savings, and increased end-user/customer satisfaction dominate the list of actual benefits achieved from deploying ITSM-related technologies. They show a strong presence in benefits achieved from AI/analytics and automation.
- Cost savings and OpEx efficiencies across and beyond IT dominated as leading drivers for AI/analytics and automation initiatives. Interestingly, the benefits actually derived from deployment mapped fairly closely to the initial drivers.
- Shared AIOps, incident response analytics, and governance-related analytics led for top priorities in critical AI/analytics deployments.
- The synergies between more advanced levels of automation and more progressive levels of AI/analytics adoption are striking. For instance, those already automating complex processes, or actively expanding automation across the entire IT infrastructure, were:
  - *More likely to have more investments in AI/analytics*
  - *Achieve more benefits from AI/analytics deployments*
  - *Show more points of integration for their AI/analytics investments*
  - *Be more likely to have AI/analytics drive their automation*
- While the list of obstacles in AI/analytics and automation varies in terms of specifics, the obstacles are overall consistent in a balance of technology-specific issues (e.g., lack of integration with current tools), resource issues (e.g., cost budgeting issues), cultural/political and process issues (e.g., resistance to change) and training or skillset issues (e.g., lack of effective skillsets).
- At 32%, exclusive virtual agent deployment led exclusive use of AI bots (24%), but 28% were using both. Only 8% had deployed neither type (or didn't know).
- Integrated operations and self-service capabilities were the top two primary use cases for AI/analytics and automation.
- The data showed a very strong correlation between success rates in AI/analytics with those in automation.
- The Internet of Things (IoT) is slowly rising in importance year over year in EMA research. 21% of respondents with active automation deployments listed IoT as one of their top four automation priorities.

Cost savings and OpEx efficiencies across and beyond IT dominated as leading drivers for AI/analytics and automation initiatives. Interestingly, the benefits actually derived from deployment mapped fairly closely to the initial drivers.

## High-level ESM findings

- 87% have some level of ESM deployment. Only 4% have no plans.
- Advanced levels of automation favor more mature levels of ESM adoption.
- Training, data center utilities/power (which could also rank under IoT), and human resources narrowly led a field of diverse ESM initiatives.
- Regardless of company size, most organizations reported ITSM support of more than 4 ESM areas.
- The top two drivers of ESM are employee/customer satisfaction and digital transformation.
- The executive suite leads the drive to ITSM, followed by the ITSM team.
- ITSM most often serves as a ticket/request platform for ESM, with the functional areas doing the fulfillment. User self-service portals are a regular feature of ESM initiatives served by ITSM.
- Service metrics are kept separately for IT and ESM matters.
- Cost and unexpected customizations were the top obstacles to ESM.
- Increased ITSM budget and improved customer/employee satisfaction led as the top measurable impacts from ESM initiatives.
- 38% of the respondents saw the impact of ESM on IT's relationship to the business as "transformational." A scant 1% saw it as negative.
- The top recommendations for ESM going forward are to be prepared for changes in how your IT team works, and evaluate technologies based on an organization's unique needs and environments.
- ESM is mainstream, growing, and a vibrant market reality and opportunity.

Regardless of company size, most organizations reported ITSM support of more than 4 ESM areas.

## High-level ITSM findings

- Many ITSM teams are reinventing themselves through a progressive adoption of AI/analytics and automation technologies, as well as innovative uses of their ITSM platforms, such as ESM services. The results are overall strongly positive outcomes.
- The ITSM team is increasingly made of stakeholders well beyond the service desk, which in turn contributes to the marked trend of ITSM's perceived alignment with business goals and processes.
- Fifty-five percent of respondents viewed ITSM as substantially growing in importance, 31% viewed ITSM as somewhat growing in importance, and 12% viewed it as staying the same. Only 2% saw ITSM as declining in importance.
- Putting budget behind opinion, most organizations report ITSM budget increases between 10% and as much as 75%, with the majority between 10% and 50%. Only a handful reported a decrease and 10% staying the same.
- ITSM is a vital organizational force that is transforming through adaptive reinvention.

## Demographics and Organization

EMA asked approximately 80 questions of 400 respondents in January 2019.

<b>Geography</b>	<b>204</b> North America
<i>Respondent count by geography</i>	<b>93</b> Europe (England, Germany, France)
	<b>93</b> Asia-Pacific (China, India, Australia)
<b>Company size</b>	<b>32%</b> large enterprise (more than 10,000 employees)
<i>There was a balanced mix of company sizes, as defined by number of employees</i>	<b>34%</b> mid-tier (2,500-10,000 employees)
	<b>34%</b> small (500-2,500 employees)
The breakdown of respondent title was	<b>30%</b> C-level (CEO, CFO, CIO, CISO, Chief Data Officer)
	<b>34%</b> IT VP, director, or manager
	<b>34%</b> IT staff
	<b>34%</b> non-IT (but each had to qualify as ITSM stakeholders to participate)

### Organization

- 68% of ITSM budgets increased by 10% or more this year. Only 12% decreased or stayed the same.
- When asked which group has primary responsibility for overseeing/coordinating ITSM-related capabilities, 36% named the IT executive suite, followed by 30% who named IT operations. Note: this is a move toward the executive suite, trending against EMA research in previous years.
- Asked which was the most senior managerial level for ITSM, the CIO was 32%, director 27%, manager 22%, and VP 18%. CIO leadership increases with company size: small 25%, medium 30%, large 44%.

## AI/AIOps and Analytics

The term “artificial intelligence,” or AI, used aggressively across the IT industry is a source of confusion because it can mean many different things to many different people. According to a non-industry-specific source, the definition of AI is “an area of computer science that deals with giving machines the ability to seem like they have human intelligence: the power of a machine to copy intelligent human behavior.” Needless to say, this definition leaves a great deal of mystery on the table in terms of how this is done. Moreover, it suggests a level of advancement that, strictly speaking, remains well beyond most IT technologies today.

In response to EMA’s question, “When you think of AI, what comes to mind?” the top ten answers were the following:

1. Machine learning
2. Big data
3. AI bots
4. Integrated automation
5. Virtual agents
6. Analytics specific to business performance
7. Predictive analytics
8. AIOps
9. Behavioral analytics
10. Asset and cost optimization analytics

These priorities reflect the ongoing struggle to connect the dots between the often-exalted vision of artificial intelligence and the reality behind the list of technologies that are furthering advanced IT analytics today. However, it’s safe to say that machine learning, the top choice on this list, is becoming ever more present, valuable, and rewarding.

## Looking at Actual Deployments for AI and Analytics

When EMA asked about what was actually being deployed in the way of AI and analytics, respondents gave the following results:

1. Big data
2. Analytics specific to business performance
3. Shared AIOps with operations
4. Asset and cost optimization analytics
5. Workload management or batch analytics
6. Governance-related analytics
7. Virtual agents
8. Intelligent automation
9. AI bots

More advanced levels of adoption, indicated by respondents citing more than five analytics options deployed, also correlated with:

- Viewing ITSM as substantially growing in importance
- Broader support for advanced service management processes
- Adoption of more advanced levels of automation, including IoT
- More progressive ESM initiatives
- Greater likelihood of success in AI/analytics deployments

When EMA asked about top priorities in terms of AI/analytics, the sequence was different from the more general list of what was deployed, as shown in Figure 1.

### Which of the following is your top AI/analytics initiative based on current deployments?

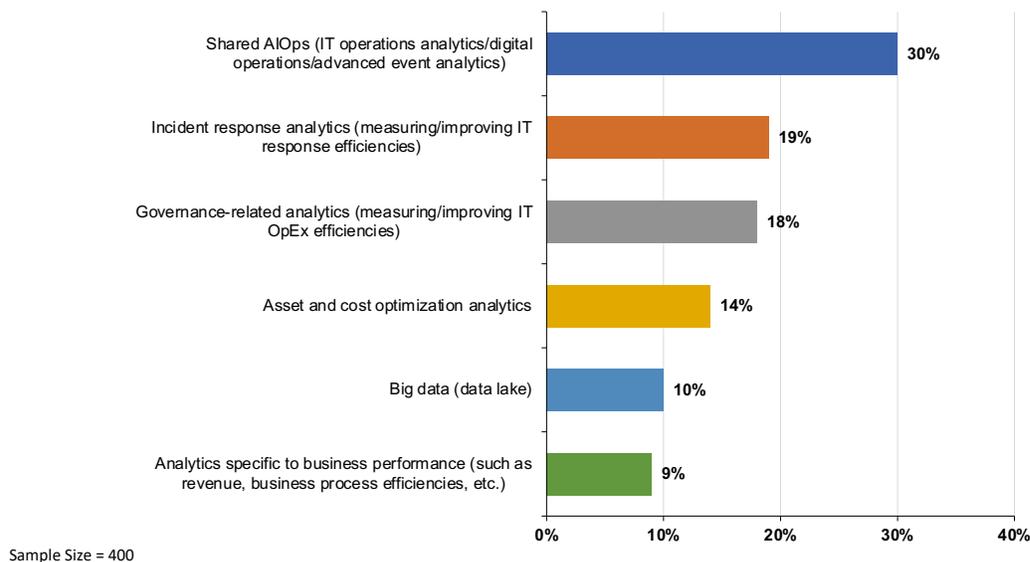


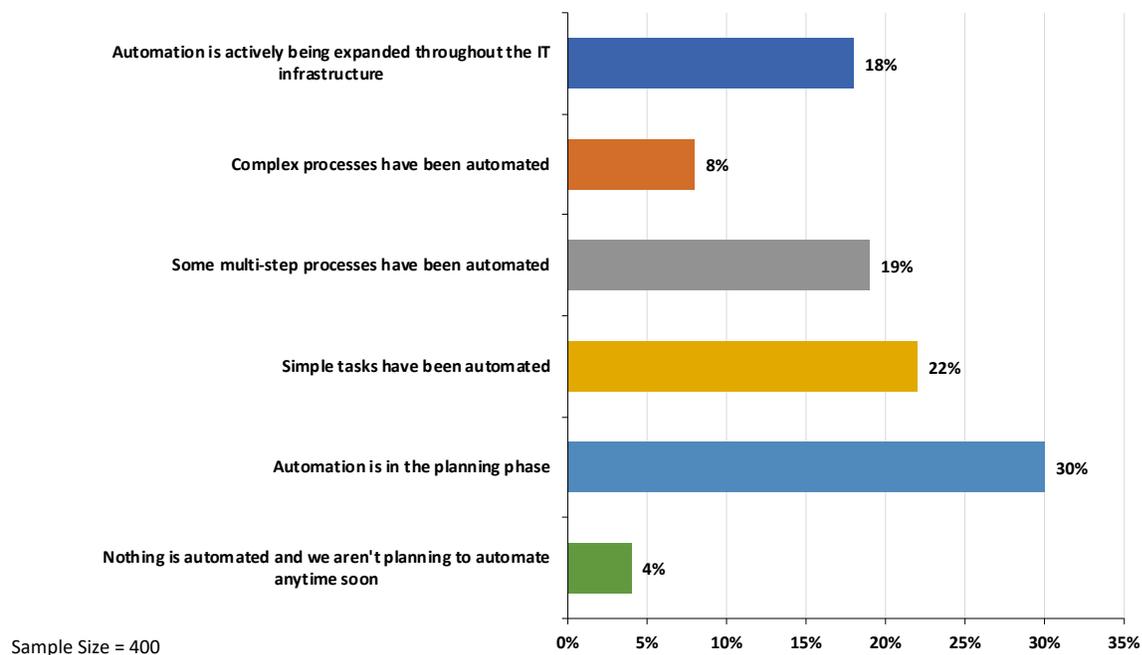
Figure 1: Shared AIOps, incident response analytics, and governance-related analytics led for top priorities in critical AI/analytics deployments.

## Automation

The handshake between automation and AI/analytics was a critical focus for this research, which revealed a surprising level of commonality between the two areas. The fact that automation and AI/analytics are complementary is, of course, extremely logical: one provides insight, while the other delivers action. However, logic doesn't always prevail, so it was gratifying in this case to see such consistency in reviewing the two areas.

Figure 2 helps frame the level of automation in play among this survey's respondents. It presents a balanced picture ranging from initial planning stages to broad use throughout the entire IT infrastructure. Significantly, only four percent of respondents had no plans for automation.

### To what degree have you implemented automation in your organization?



*Figure 2: Respondents reflected a balanced progression between the top two most advanced levels of automation at 26%. The next group reflects early levels of implementation at 41%, and the planning stage at 30%. Only 4% showed no plans for automation whatsoever.*

The synergies between more advanced levels of automation and more progressive levels of AI/analytics adoption are striking. For instance, those already automating complex processes, or actively expanding automation across the entire IT infrastructure, were:

- More likely to have more investments in AI/analytics
- Achieving more benefits from AI/analytics deployments
- Showing more points of integration for their AI/analytics investments
- More likely to have AI/analytics drive their automation

There were also strong synergies with progressive ESM, including showing more areas/use cases for ESM deployment, realizing more measurable impacts from ESM, and being more likely to view their ESM initiatives as “transformational.”

**When EMA asked respondents about their most critical automation priorities, the top ten were:**

1. IT process automation/runbook
2. Automation in support of IoT
3. Workflow automation combined with social IT
4. Incident resolution
5. Alert-driven notification
6. Cross-IT change management
7. Service request management
8. SecOps/security-related automation
9. Enterprise service management (ESM)
10. Configuration management and infrastructure provisioning

This list reflects a need for diversity in function, combined with versatility in use cases. *IT process automation* is a versatile approach that supports multiple use cases, so it's no surprise that it came in first—so is *workflow automation combined with social IT*. However, every other item on the list is use case-specific, with *IoT* showing a rising priority compared to past EMA research.

The research added some additional insights into levels of automation advancement from two perspectives: the combination of automation, AI, and analytics to enable actions, and the degree to which that combination is trusted to take action.

**First, in terms of understanding priorities directed at combining automation with AI/analytics, respondents indicated the following:**

- **Extremely high priority** (38%)
- **High priority** (46%)
- **Second-tier priority** (13%)
- **Not a priority** (only 2%)

**Taking the next step, when asked about allowing automated actions to be driven directly from AI/analytics insights, respondents skewed toward more progressive levels of automation adoption.**

- **High:** Most of the possible automated actions are enabled with options of human override (48%)
- **Medium:** Most automated actions are enabled only through human oversight (48%)
- **Low:** We don't allow automated actions except for proven routines, such as batch processing: (5%)

When asked about their most valuable achieved benefits, the top priorities in the respondent list paralleled benefits achieved in AI/analytics adoptions. **The top ten were:**

1. Cost savings across IT
2. Improved IT operational efficiencies
3. Improved end-user/customer satisfaction
4. Improved quality of delivered services
5. Reduced unplanned IT work time
6. Faster incident and problem resolution
7. More efficient release management
8. Faster and more accurate change management
9. Improved business outcomes for IT services
10. Improved revenue due to reduced downtime

## Virtual Agents and AI Bots

Understanding ITSM priorities for virtual agents and AI bots presents something of a semantic challenge, as indicated by Figure 3, in which 7% of respondents fully equated the two. Indeed, an AI bot could serve as a virtual agent when the agent is AI-driven, or at least empowered by machine learning. **In order to provide a framework for looking at the research data, EMA recommends the following high-level definitions:**

**Virtual agents** – are most often directly used to enable routine tasks that service desk agents perform, while interacting in text and/or speech with end-user consumers seeking services.

**AI bots** – is a technically descriptive term for automation-driven bots to perform routine and sometimes non-routine tasks by leveraging machine learning. Through machine learning, these bots are able to adapt to unique environmental specifics. AI bots can be deployed in support of many different use cases across all of IT, as well as within the enterprise.

### Which statement best describes your deployment of virtual agents and/or AI bots?

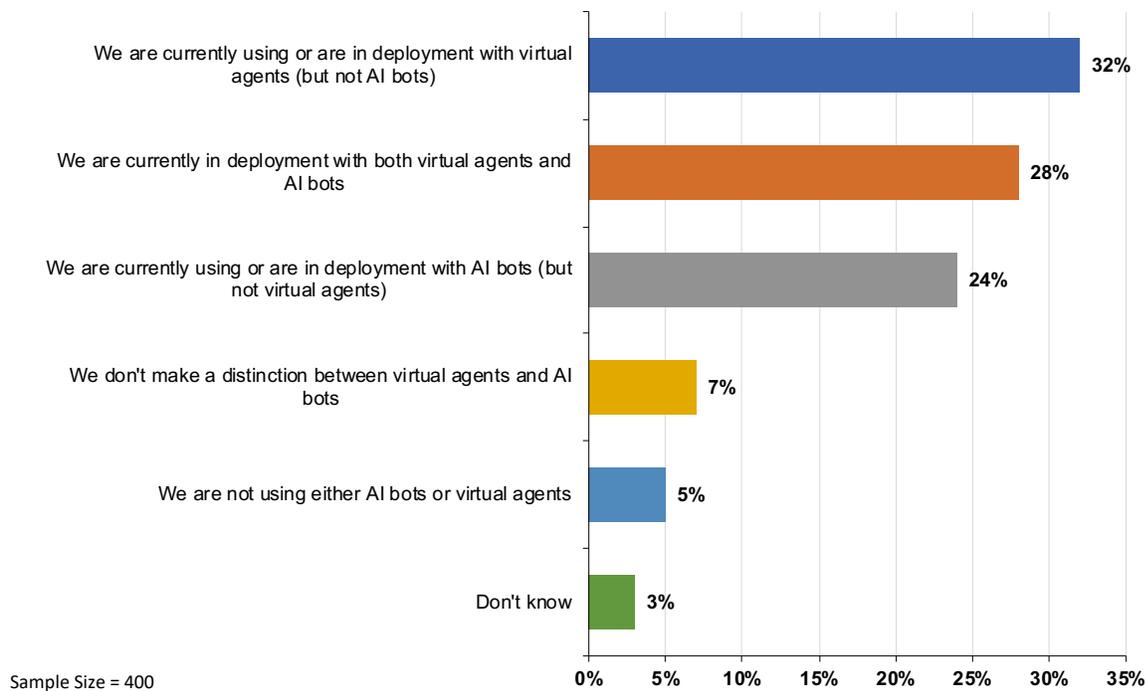
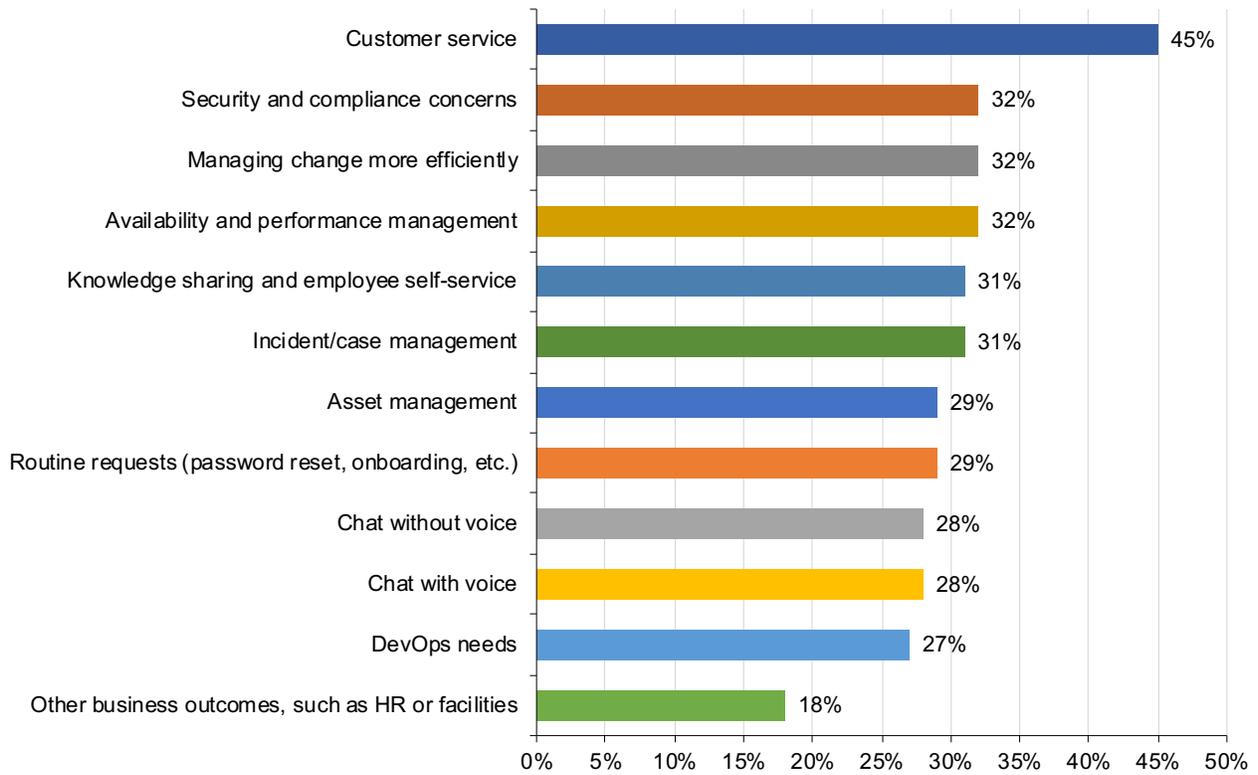


Figure 3: Exclusive virtual agent deployment at 32% led exclusive AI bots at 24%, but 28% were using both. Only 8% had neither type deployed, or didn't know.

When asked about how AI bots were being used by ITSM teams in particular, Figure 4 underscores both flexibility and breadth.

## How are AI bots currently being used or planned to be used?



Sample Size = 238, Valid Cases = 238, Total Mentions = 861

Figure 4: Customer service led for AI bot deployment, followed by a three-way tie with security/ compliance, managing change, and availability and performance management, all at 32%.

## Success Factors

One of the goals of this research was to understand whether ITSM was overall in growth mode, or in decline. The data, as shown in Figure 5, clearly favors the former.

### How do you view the future of ITSM in your organization over the next three years?

"I see ITSM as..."

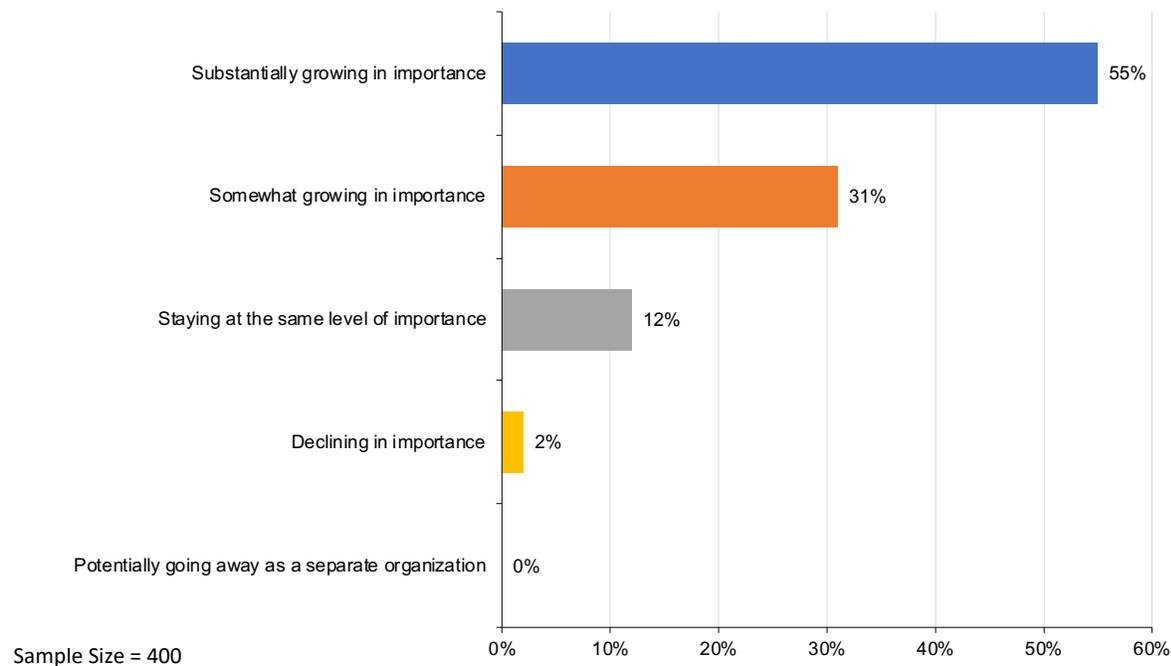


Figure 5: Overall, respondents were strongly positive about the future of ITSM.

This positive outlook correlated well with success in AI/analytics and automation adoptions. EMA found a strong correlation between success rates in AI/analytics and automation. In order to explore this close correlation, EMA examined the responses of those who were “extremely successful” in both AI/analytics and automation.

#### As a group, these respondents were more likely to:

- Show ITSM budget growth above 50%
- Have executive oversight with CIO-level involvement
- Support more service management processes and more strategic initiatives
- Have more ITSM-related technologies deployed
- Be more advanced in their level of automation
- Show more benefits from their AI/analytics adoptions
- Be more diverse in their use of AI bots
- Be more progressed in their ESM deployments

This commonality suggests that ITSM is evolving cohesively as a whole, rather than in a piecemeal fashion, toward a more analytic/automated future. In fact, many ITSM teams are indeed reinventing themselves through progressive adoption of AI/analytics and automation technologies, with overall strongly positive outcomes.

# Enterprise Service Management (ESM)

ESM is mainstream. Whether thriving in longstanding, mature implementations or taking its enterprise place in new deployments, ESM is everywhere...except for the 5% who responded that they have no plans for ESM. When asked, "How long have ESM or business process workflows been deployed from your ITSM platform or team?" the responses were:

- MATURE 46%** *We have been fully deployed for more than one year*
- NEW 41%** *ESM is relatively new to our ITSM team (in deployment now or less than a year)*
- PLAN 8%** *We are not currently doing ESM, but plan to in the near future*
- NONE 5%** *We have no plans for ESM*

In analyzing the data from numerous angles, it became apparent that the only two groups worth reporting were the mature ESM implementations and the new ESM deployments. The other two groups were a small sample with unremarkable findings. The mature and new ESM groups were a study in contrast.

Throughout all aspects of this survey, there was a consistent and significant difference between those who report being in deployment for more than one year (mature) and those reporting that it is relatively new (new) on almost every question asked.

## ESM areas served from ITSM

The question, "Which of the following areas does your company's ITSM team currently support or have plans for in terms of ESM?" yielded no clear winners, though training, data center utilities/power, and human resources did narrowly lead the crowded pack. The areas selected differed in predictable ways by industry. For example, manufacturing chose sales/manufacturing at 44% (vs. 27% average), 33% were physical security, 54% were supply chain, and 44% were procurement. Geography made no discernible difference and company size mattered only in the number of areas supported.

### Which of the following areas does your company's ITSM team currently support, or have plans for in terms of ESM?

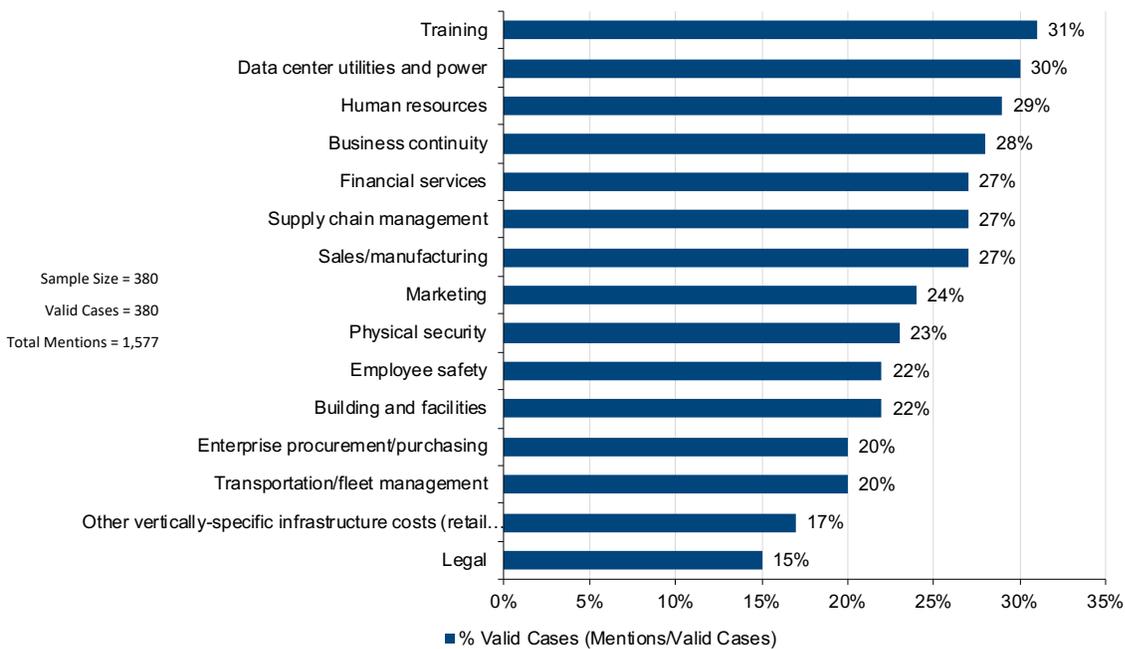


Figure 6 : ESM covers a broad and growing range of non-IT functions.

### ESM enablers

When asked, “How is your ITSM team facilitating ESM?” respondents chose fairly evenly from a palette of options.

- Many use their ITSM platform to process tickets and requests, but have the functional areas respond to the items and fulfill the requests.
- It is common for SLAs to be kept for each workflow, housed in ITSM but reported and audited separately from each other and from IT SLAs.
- Not surprisingly, user self-service through a portal was a highly rated ESM enabler.
- One-quarter of the organizations provide ITSM support to ESM functions on a chargeback basis.
- 23% report leveraging their ITSM solution provider (vendor) outside of IT.

The strongest single point of facilitation in the ITSM/ESM picture is communication between the ITSM team and enterprise stakeholders. Whether on a regular basis or at timed annual exchanges, this communication was highly ranked.

### Measurable benefits and the impact of ESM

There are many common-sense benefits that accompany effective ESM initiatives, but EMA asked respondents to identify the impacts that are measurable. Increased budget for ITSM led the list, followed closely by improved customer satisfaction (CSAT) and improved employee satisfaction (ESAT) in a near third place.

The next tier of measurable benefits included, in order: improved SLAs and reduced downtime for enterprise services, improved customer loyalty scores (net promoter scores), and increased headcount for ITSM.

One of the most compelling benefits of ESM is its potential to impact the organization across functions. When EMA asked, “To date, what has the impact of supporting ESM been on ITSM and IT in terms of IT’s relationship to the business?” the response was overwhelmingly positive.

- One-third viewed ESM’s impact as “transformational,” with 52% of IT executives making this choice
- The next-largest impact bracket was “significant,” followed by “meaningful”
- Only a handful saw no impact, with just under 1% experiencing a negative effect

The long-heralded IT/business alignment appears to be thriving in the ITSM/ESM partnership.

## Conclusion

Although the research title led with “Automation, AI, and Analytics,” the reinvention of ITSM was its primary driving inquiry. Years of EMA research proves ITSM to be a hub of innovation and that it is in no danger of disappearing. In this research, EMA wanted to explore the ways in which automation and AI/analytics capabilities are shaping the new ITSM.

In order to understand the interrelationships between these technologies and the reinvented roles of ITSM, EMA looked at use cases, drivers, benefits, and results—measurable metrics and business impact—as well as the organizational dynamics that form the context of both new and established practices.

In order to vet the respondent pool, EMA detailed minimum requirements around automation and AI/analytics adoption as well as clearly defined investments in ITSM. This requirement fielded respondents from organizations that are predictably more advanced than average, some much more so than others. That being said, the results were clear enough to show that the findings are representative of the state of ITSM as shaped by technology and time.

ITSM is a clear winner in this time of digital transformation. Automation, AI, and analytics are increasingly employed to cross functional silos with workflows and intelligence that improve cost and operational efficiencies within and beyond IT. The more boundaries are crossed, the more critical the need for a centralized point of contact and control becomes. That point is ITSM. The more boundaries that are crossed, the higher in the organization oversight must reside. That place is most often the CIO, with other members of the executive suite being very interested stakeholders.

Although the ITSM team plays a key role in the use of automation, AI, and analytics, those technologies command a much broader audience and budget participation than the traditional help desk. In fact, ITSM stakeholders beyond the service desk are some of the most proactive and technology-aware contributors to the high levels of service demanded by, and provided to, today’s organizations.

ESM and IoT alike exploit ITSM technologies and advances in automation, AI, and analytics to redefine ITSM itself. All indications are that this process will be an ongoing work of continual reinvention and improvement. Success breeds expansion, and expansion breeds success. Organizations that successfully employ automation reap immediate benefits that provoke an appetite for more applications of automation. Use breeds trust in the results and trust breeds use...and so the cycle goes.

ITSM sits smack in the middle of this cycle of innovation. Respondents overwhelmingly view the importance of ITSM as expanding, with budgets and headcounts keeping pace. ESM as well as services that directly benefit the business are viewed as transformational to the ITSM and IT relationship with the business. Everyone wins. As the benefits mount, so does the appetite for automation and AI-enabled services in both existing and new frontiers of service. Meeting this growing demand, the ITSM organism —platform, processes, technologies, organization, and team—will need to remain proactively flexible in a state of constant reinvention.

## About Enterprise Management Associates, Inc.

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