Internet of Things: Where Your Competitors Are Investing
Overview

Digital continues to be a top priority for organizations, with 82% indicating they have a large-scale digital transformation or management initiative underway. This research helps strategy leaders understand the Internet of Things (IoT), which CIOs regard as a top-five game-changing technology. Specifically, it provides data on companies’ IoT deployment and implementation timelines, use of key performance indicators (KPIs) and centers of excellence (COEs) and budget spend and payback period.

Key findings

• Senior executives regard IoT as top-five game-changing technology due to its ability to create new sources of data, provide real-time performance updates and create new value propositions.

• According to a Gartner survey, 75% of companies had by the first half of 2019 already deployed at least one use case of IoT with adoption focused on the use of digital twins, virtual representations of physical objects that allow for more efficient, real-time monitoring.

• Nearly all organizations use KPIs to track the business outcomes of at least some IoT implementations, and around 75% have given IoT COEs responsibility for most, or all, IoT implementations.

• In 2019, an overwhelming 99% of companies either maintained or increased their budget for IoT (the average increase was 11%). And in 2020, budget allocations for IoT are expected to increase further.
Introduction to IoT

IoT is among the most hyped technologies that could reshape the way companies operate; our 2019 CIO Survey shows IoT is regarded by CIOs as one of the top-five game-changing technologies. The hype around IoT makes it an essential topic for strategy leaders seeking to stay on top of emerging trends and to navigate digital transformations. While many reasons exist, three top the list, including IoT’s ability to:

1. Generate new sources of data from companies’ current operating structures (e.g., collect data from manufacturing equipment to predict maintenance requirements).
2. Provide real-time feedback into company performance (e.g., use data from amusement park smart trash cans to measure consumer traffic, spending patterns).
3. Create new value propositions for companies to enhance competitive advantage (e.g., integrate data to improve product/service offerings, such as smart refrigerators).

This report looks at how far companies have come with IoT. Specifically, it includes IoT adoption trends, the maturity of companies’ processes for IoT implementation and the budget and financial requirements for IoT adopters.

We define IoT as a network of dedicated physical objects (things) that contain embedded technology to sense or interact with their internal states or the external environment. This excludes general-purpose devices, such as smartphones, tablets and PCs. One example is an amusement park using smart trash cans to measure customer activity.
IoT adoption trends

During the first half of 2019, 75% of companies had already deployed at least one use case of IoT. 2018, in particular, saw a large jump in the number of companies deploying IoT, jumping from 23% in or before 2017 etc. to 37% in 2018 (see Figure 1).

Figure 1: IoT deployment by fiscal year

16% plan to deploy by 2020
8% plan to deploy by 2019
15% first half of 2019
23% in 2017 or before
37% in 2018

n = 511
Source: 2019 Gartner IoT Implementation Trends Survey
Note: Percentages may not add up to 100% because of rounding.
Currently, adoption is focused on the deployment of digital twins. A digital twin is a digital representation of a physical object (typically rendered as a software object) that mirrors the physical object’s characteristics. For instance, a jet engine (the physical object) can be replicated virtually so engineers can run simulations before the actual jet engine is built.

Digital twins are becoming the dominant design approach for IoT applications: 26% of IoT implementers have already implemented a digital twin, with another 59% in process or planning to within the next year (see Figure 2). Digital twins are prevalent because IoT systems that operate without them send multiple messages with the same data over multiple channels. But digital twins decouple each system from the physical object, reducing communication overhead and data redundancy that occurs when multiple systems interact with the same physical object.

**Figure 2: Digital twin implementation status and time horizons**

- Already implemented digital twins: 26%
- In process of implementing digital twins: 42%
- Planning to implement them in the next year: 17%
- Planning to implement them in the next 2 to 3 years: 9%
- Planning to implement them in the next 4 or more years: 2%
- Not planning to implement digital twins at all: 3%
- We are not familiar with this technology: 1%

n = 503  
Source: 2019 Gartner IoT Implementation Trends Survey
Maturity of IoT adopters

When it comes to pursuing advanced technologies like IoT, two challenges typically emerge: Traditional performance measures fail to capture the value of these different-in-kind initiatives, and traditional corporate structures don’t fit neatly into these initiatives as their impact on business and functional units (and their roles and responsibilities) can be unclear. Organizations with mature IoT implementations have common responses to these challenges. The first is the development of KPIs capable of measuring these nontraditional initiatives, and the second is the creation of centralized functions (e.g., COE) formally tasked with managing digital initiatives throughout the organization.

Although IoT adoption is in its early stages, the early adopters tend to be pretty far along in terms of maturity from an IoT KPI and COE perspective. Nearly all organizations have KPIs that can track business outcomes for at least some of their IoT implementations, with 78% using well-defined KPIs to track business outcomes for most (if not all) IoT implementations. Only 1% of companies that implemented IoT have no KPIs that enable them to monitor the progress of IoT initiatives (see Figure 3).

![Figure 3: Maturity of KPI development for IoT](image-url)
And when it comes to the second aspect of maturity, centralized structures to manage IoT implementations, 96% of organizations have an IoT COE with at least some scope for the implementation. Nearly three-quarters of organizations have already given their IoT COEs responsibility for most, if not all, of their IoT implementations (see Figure 4).

**Figure 4: Use of IoT COEs for IoT implementations**

Percentage of respondents

- Have an IoT COE with global responsibility for all our IoT implementations: 24%
- Have an IoT COE with limited scope for most of our IoT implementations: 50%
- Have an IoT COE with limited scope for about half of our IoT implementations: 15%
- Have an IoT COE with limited scope for some of our IoT implementations: 7%
- No IoT COE: 1%

n = 511
Base: All respondents, excludes “don’t know”
Source: 2019 Gartner IoT Implementation Trends Survey
Note: Percentages may not add up to 100% because of rounding.
IoT budget and payback periods

From a financial aspect, Gartner looked at two things: budget spend and anticipated payback periods. In 2019, an overwhelming 99% of companies either maintained or increased their budget for IoT (the average increase was 11%). And in 2020, budget allocations for IoT are expected to increase further. Only 2% of companies will decrease their IoT budget, and for those increasing it, nearly 75% plan to do so by 5% to 25% (see Figure 5).

**Figure 5: Change in budget for IoT projects**

Current versus upcoming fiscal year

- Increased by 25% or more: 3% (Current), 6% (Expected)
- Increased by 15% to less than 25%: 16% (Current), 17% (Expected)
- Increased by 5% to less than 15%: 59% (Current), 54% (Expected)
- Increased by less than 5%: 16% (Current), 14% (Expected)
- Stayed the same: 5% (Current), 7% (Expected)
- Decreased by less than 5%: 0% (Current), 1% (Expected)
- Decreased by 5% to less than 15%: 1% (Current), 0% (Expected)
- Decreased by 15% to less than 25%: 0% (Current), 1% (Expected)

Source: 2019 Gartner IoT Implementation Trends Survey
While some of these budget increases may be due to new advancements in the technology itself (e.g., more applicable to different businesses requirements, easier to adopt), another factor may be the nearness of returns many organizations expect from their IoT investments, visible in data on payback periods. Despite the newness (and possible uncertainty) of IoT investments, most are confident they’ll achieve financial payback from their IoT projects in a fairly short time frame. Eighty-six percent of the companies we surveyed reported they calculated or projected the time frame required to achieve financial payback for their IoT project. Of those companies, 92% estimated they would achieve financial payback within five years, and over half said less than three years (see Figure 6).

Figure 6: Estimate to achieve financial payback for an IoT project

<table>
<thead>
<tr>
<th>Percentage of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than a year</td>
<td>10%</td>
</tr>
<tr>
<td>1 to less than 2 years</td>
<td>32%</td>
</tr>
<tr>
<td>2 to less than 3 years</td>
<td>32%</td>
</tr>
<tr>
<td>3 to less than 5 years</td>
<td>18%</td>
</tr>
<tr>
<td>5 to less than 10 years</td>
<td>8%</td>
</tr>
<tr>
<td>10 years or more</td>
<td>0%</td>
</tr>
</tbody>
</table>

n = 428
Source: 2019 Gartner IoT Implementation Trends Survey
Note: Percentages may not add up to 100% because of rounding.

And, if anything, the above estimates might be conservative. For instance, 52% of organizations reduced their financial payback period from their initial estimates during the implementation of IoT projects.
Conclusion

Senior executives regard IoT as a top-five game-changing technology due to its ability to create new sources of data, provide real-time performance updates and create new value propositions. In 2019, an overwhelming 99% of companies either maintained or increased their budget for IoT (the average increase was 11%). And in 2020, budget allocations for IoT are expected to increase further. From an adoption standpoint, not only have many already deployed working IoT use cases, but they’ve also developed mature infrastructure (e.g., KPIs and IoT COEs) to implement and monitor IoT solutions. For these companies, IoT is something happening right now. As a result, strategy leaders should understand IoT in their industries (and beyond) to identify whether delaying investment could mean falling behind others who are already realizing the financial payback.

How we help

The pathway to digital transformation is unclear, and current digital capabilities are insufficient to achieve transformation. Strategy leaders must approach their roles in a new way to drive the business to make enough of the large and transformative digital investments necessary to grow and evolve. Gartner can help: We provide strategists with the intelligence and tools needed to stay on top of market changes, potential opportunities and threats stemming from emerging digital technology and trends.
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