2018 CIO Agenda: Asset-Intensive Industry Insights

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To achieve digital transformation and filter outside guidance, CIOs in asset-intensive industries need to understand how their approach to IT strategy and investment differs from those in other industries. This research offers insight and opportunity to optimize your 2018 IT initiative portfolio.

Key Findings

- Asset-intensive organizations are more likely to plan for growth and to do so by expansion through external avenues — either through combining with other companies or by entering new geographies.
- Asset-intensive organizations see the Internet of Things (IoT) as much more important for their work than peers in other industries, since the nature of their business is tied to the performance of equipment.
- Enterprise resource planning (ERP) investment is high on both the increase *and* the decrease spending lists, implying that ERP projects are big, important and long-cycle investments for asset-intensive organizations, but are not at a continuous high rate of expenditure.

Recommendations

CIOs of asset-intensive organizations who are focused on aligning IT, the IoT and operational technology (OT) investments:

- Prepare for dynamic growth by making mergers and joint ventures a core competency. When looking at software investments, evaluate how those cater to international needs and how the systems deployed can be supported.
- Deploy the IoT in the business to support equipment monitoring for reliability and process efficiency, as well as for tracking physical equipment and processes in a work environment. Work with business divisions that may already be embarking on IoT projects.
- Forecast and budget ERP upgrades over the long term (at least six years), taking into account potential annual support and enhancement cost increases.

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Survey Objective

The purpose of the 2018 Gartner CIO Agenda is to help CIOs and other IT leaders set and validate their management agendas for the coming year. To achieve this, the CIO Survey gathered data from 3,160 CIO respondents in 98 countries and across major industries, representing $13.0 trillion in revenue and public-sector budgets and $277 billion in IT spending. Respondents came from a

range of industries, including manufacturing, government, professional services, banking, energy/utilities, education, insurance, retail, healthcare, transportation, communications and media.

This report focuses on the answers from 1,024 CIO respondents from asset-intensive companies and compares them with the total sample.

This report focuses on the following key questions:

1. What is the top strategic business priority for the organization over the next two years?
2. Which technology areas will help the business to differentiate from rivals and win?
3. Which technology areas will receive the highest amount of new or additional funding in 2018?
4. Which technology area will see the biggest reductions in funding in 2018 versus 2017?
5. What is your organization's biggest barrier to moving from the initial phases of digital business transformation to scale?

Together, the answers to these questions offer some revealing insights into how asset-intensive industry CIOs are planning to transform themselves and transform both their businesses and the IT that supports those businesses. This data, together with Gartner's interaction with clients and coverage of the industries, is the basis for the analysis and recommendations within this document. This research is linked to the Key Initiative of how to execute a digital strategy in asset-intensive organizations ("Aligning IT, IoT and Operational Technology Investments Primer for 2017").

The full survey, covering more than 50 questions, was designed to prove or disprove a series of hypotheses devised by a core team of Gartner research analysts and Executive Programs representatives. The key findings from the total dataset are published in their entirety as "The 2018 CIO Agenda: Mastering the New Job of the CIO."

Data Insights

To understand the differences in strategy and investment for asset-intensive companies, we compared the data received from those companies with the responses from the balance of all other companies. Asset-intensive companies have a greater reliance on physical infrastructure, plant and equipment and proportionally less emphasis on product innovation and customer engagement. This is not to say that customers and products are unimportant, but the balance of focus and investment is often tipped in favor of assets and software related to physical management. In certain cases such as power generation, mining and oil, there is disproportionally more focus on physical infrastructure.

Top Business Priorities

We asked survey respondents to give a big picture of what is driving their decisions in the form of their organizations' top objectives: "Thinking about your organization as a whole, what would you say are its top business objectives for the next two years (2017/2018)?"

While the top two (growth/market share and digital business/digital transformation) are ranked in the same order for asset-intensive industries as for all others, a much higher percentage of asset-intensive businesses prioritize growth than other industries (34% versus 23%). There are also distinct differences in some of the ranking of priorities. For example, asset-intensive organizations rank corporate/M&A/new business/consolidation and globalizing the business/geographic expansion higher. But, they rank customer focus much lower.

Additionally, profit improvement/profitability/asset monetization and innovation, R&D, new products/services are ranked relatively higher for asset-intensive organizations (see Figure 1).

Figure 1. Strategic Business Priorities

Rank	Asset-Intensive Industries (n = 844)	Percentage of Respondents
1	Growth/market share	34%
2	Digital business/digital transformation	14%
3	Profit improvement/profitability/asset monetization	13%
4	Innovation, R&D, new products/services	12%
5	Corporate/M&A/new business/consolidation	10%
6	Operations improvement/efficiency/excellence	8%
7	Customer focus	8%
8	Cost optimization/management/reduction	8%
9	Productivity/optimization/efficiency	7%
10	Globalizing the business/geographic expansion	7%

Rank	All Others (n = 1,771)	Percentage of Respondents
1	Growth/market share	23%
2	Digital business/digital transformation	19%
3	Customer focus	9%
4	Profit improvement/profitability/asset monetization	9%
5	Innovation, R&D, new products/services	9%
6	Technology initiatives/improvements	8%
7	New customers/retention/sales	6%
8	Corporate/M&A/new business/consolidation	6%
9	Process improvement/optimization/automation	6%
10	Cost optimization/management/reduction	5%

Base: All answering, excludes DK; n varies by segment.
Q. Thinking about your organization as a whole, what would you say are its top business objectives for the next two years (2017/2018)?

Source: Gartner (October 2017)

Analysis of Data

If we look at the results in combination, there is a clear leaning toward growth and doing so by expansion through external avenues — either through combining with other companies (10% in asset-intensive organizations versus 6% in all others) or in new places (7% in the asset-intensive organizations).

Unsurprisingly but notably, customer focus is mentioned by only a small proportion of the sample (8%), since many asset-intensive organizations will be in commoditized markets without direct end-user customer contact. There are exceptions, particularly in manufacturing businesses, but overall, there is not as much differentiation possible in the customer engagement area. This leads to a more inward-focused strategy. These companies tend not to follow the fads and trends driven by consumerization. The benefit of this is that less money is wasted on untried and untested systems of innovation. Asset-intensive companies tend to adopt once the technology has been proven.

There are asset-intensive organizations that have scope to leverage product innovation. This is shown by the high ranking of innovation/R&D and new products/services, which is an area where CIOs can contribute by applying and supporting digital innovation initiatives. The profit improvement ranking is notably higher and linked to the monetization of assets, showing the continued realization that return on assets can be aided by the application of technology.

Recommendations

CIOs of asset-intensive organizations should:

- Plan for dynamic growth by preparing for mergers and joint ventures by making an adaptable IT strategy linked to growth and change a core competency. When looking at software investments, select those that cater to international needs, and plan how the systems deployed can be supported.
- Focus on profit improvement and asset monetization. This is an opportunity to use IT's contribution to digitally enhance the return on assets, both in the current role of supporting production, but also in new ways to monetize assets through further utilization (see "Mapping a Route to Asset Management and Reliability").
- Become part of product and service innovation planning by leveraging the application of digital content or capability, resulting in product and service innovation (see "2017 CEO Survey: Digital Can Be a Hard Sell for CIOs in Asset-Intensive Industries").

Top Tech to Win

To get an understanding of the technology investments that would support their goals, we asked: "Which technology area do you think is most important to helping your organization differentiate and win (achieve your mission)?"

Asset-intensive organizations are more likely to mention the IoT and ERP, but are less likely to mention cloud services/solutions or customer relationship management (CRM) than respondents in other industries (see Figure 2).

Figure 2. Top Technology to Win

Rank	Asset-Intensive Industries (n = 915)	Percentage of Respondents	Rank	All Others (n = 1,919)	Percentage of Respondents
1	BI/analytics	31%	1	BI/analytics	24%
2	Digitalization/digital marketing	17%	2	Digitalization/digital marketing	13%
3	Internet of Things	14%	3	Cloud services/solutions	11%
4	Cloud services/solutions	7%	4	Mobility/mobile applications	6%
5	Enterprise resource planning	7%	5	Infrastructure/data center	6%
6	Mobility/mobile applications	6%	6	Customer relationship management	6%
7	Automation	5%	7	Artificial intelligence	6%
8	Artificial intelligence	4%	8	Enterprise resource planning	4%
9	Customer relationship management	4%	9	Automation	3%
10	E-business/e-commerce	3%	10	Security/risk	3%

Base: All answering, excludes DK; n varies by segment.
Q. Which technology area do you think is most important to helping your business differentiate and win/is most crucial to achieving your organization's mission?

Source: Gartner (October 2017)

Analysis of Data

BI/analytics is ranked No. 1 for both asset-intensive and other industries, but by a much higher percentage for asset-intensive companies. As we see with the IoT, the evident value comes from monitoring in the industrial arena. Asset-intensive organizations see the IoT as much more important to their work than their peers in other industries, since the nature of their business is tied to the performance of equipment. Similarly, while other industries might see ERP as old technology, the true origins of ERP (defined by Gartner in 1990) were based on the needs of manufacturing. Asset-intensive organizations need to be able to coordinate multiple operations and resources, so ERP must be done well, and investment is key.

Conversely, CRM is only important if your differentiation is from customer interaction. If customer interaction innovation is not seen as a pathway to growth, the supporting CRM systems are considered less important than for other industries. Because of their risk-averse and conservative nature, we see cloud ranked lower by CIOs in asset-intensive organizations than by CIOs in other industries. Additionally, there will be a mistrust of external hosting for some organizations, with a preference to have software on-premises to minimize risk, to some degree.

Recommendations

CIOs of asset-intensive organizations should:

- Invest in BI and analytics, and create competence groups to develop and support initiatives.
- Investigate the role the IoT can play in the business. This will be particularly evident in equipment monitoring for reliability, and efficiency, as well as for tracking physical equipment and processes in a work environment (see "The Internet of Things Is Accelerating Asset Performance Management Innovation and Adoption").
- Ensure that ERP solutions are current and complete to get maximum value, as they are the core coordinating tool for complex physical processes and need to be leveraged more than in other industries.
- Ensure cloud technology risk is minimized. Highlight the benefits of flexibility, particularly in managing growth, by examining cloud opportunities and constraints, as they will not be universally accepted in asset-intensive organizations. Appoint an internal "cloud evangelist" to sell the concept to the business (see "Cloud-Based Alternatives Are Changing the Enterprise Asset Management Market").
- Look at CRM only where the company is customer-facing and has large numbers of direct customers, as opposed to asset-centric commodity companies, where fewer customers and fewer transactions are evident.

Top New Tech Spending

To get a specific idea of where the money would actually be spent in the near term, we asked respondents to list where spending increases will occur: "What are the technology areas where your organization as a whole will be spending the highest amount of new or additional funding in 2018?"

Unsurprisingly, the responses mostly correspond to the areas they think will help them "win." For asset-intensive CIOs, this means a higher ranking on expected spend for ERP and the IoT than their peers in other industries. They also list system/process automation as an area of increase, which is not ranked in the top 10 for all other industries, and they rank cloud services/solution at a lower level than their peers, for reasons outlined above (see Figure 3).

Figure 3. Top Technology Areas for New Spending

Rank	Asset-Intensive Industries(n = 921)	Percentage of Respondents
1	Bi/analytics	23%
2	Enterprise resource planning	16%
3	Digitalization/digital marketing	13%
4	Cloud services/solution	10%
5	Cyber/information security	9%
6	Internet of Things	9%
7	Customer relationship management	7%
8	Infrastructure/data center	6%
9	System/process automation	5%
10	Mobility/mobility applications	5%

Rank	All Others (n = 1,926)	Percentage of Respondents
1	Bi/analytics	17%
2	Cloud services/solution	14%
3	Cyber/information security	13%
4	Digitalization/digital marketing	12%
5	Infrastructure/datacenter	9%
6	Enterprise resource planning	7%
7	Networking/voice/data communications	6%
8	Mobility/mobility applications	6%
9	Customer relationship management	6%
10	Data management	5%

Base: All answering, excludes DK; n varies by segment.
Q. What are the technology areas where your organization will be spending the highest amount of new or additional funding in 2018?

Source: Gartner (October 2017)

Analysis of Data

BI/analytics is ranked No. 1, with a higher percentage of asset-intensive industries nominating this as an area to increase spending. Overall, asset-intensive organizations are more likely to invest in ERP next year, with more than double the percentage from other industries mentioning ERP (16% versus 7%). ERP is fundamental to asset-intensive organizations, and if their systems are not current, benefits will degrade. This is reflective of the long-term cycle of upgrades for ERP.

The IoT is ranked No. 6 for asset-intensive organizations, but does not even make the top 10 for other industries. This reflects the drive to monitor assets using newer technologies, as indicated by the presence of system/process automation. However, it is not just about new, but also automation of processes for older platforms (e.g., OT), which is needed when dealing with expansive physical infrastructure. Finally, cloud is not ranked as high as it is for organizations that are not asset-intensive (10% versus 14%).

Recommendations

CIOs of asset-intensive organizations should:

- Enable more complete BI and analytics by investing in the IoT and traditional automation for monitoring and automating physical processes and events. Work with engineering and operations, which have traditionally been involved in the acquisition and deployment of cyber/physical systems or OT (see "Aligning IT, IoT and Operational Technology Investments Primer for 2017").
- Assess your ERP systems, and take action if they need updating to perform adequately (see "Postmodern ERP Is a Vital Foundation for Digital Business, and ERP Leaders Must Implement a Postmodern ERP Strategy").

Top Cut in Tech Spending (Tech That's "Gotta Go")

As well as asking about increases in spending, we wanted to balance out the equation by learning from respondents where spending would be reduced. We asked: "What are the technology areas where your organization will be reducing funding by the highest amount in 2018, compared to 2017?"

High on the list of tech spending to be reduced, we see ERP mentioned again by asset-intensive organizations, while other items on the list are ranked similarly between both camps. Paradoxically, more asset-intensive organization CIOs are reducing ERP spend than in other industries (14% versus 5%) (see Figure 4).

Figure 4. Top Technology Areas to Decrease Spending

Rank	Asset-Intensive Industries (n = 770)	Percentage of Respondents
1	Infrastructure/data center	26%
2	None	14%
3	Enterprise resource planning	14%
4	Legacy systems	8%
5	Optimizing operations — BSS/OSS	4%
6	Hosting services/server	3%
7	Communication/connectivity	3%
8	Software development/upgrades	3%
9	Software licensing/maintenance/support	3%
10	Application development	2%

Rank	Total Sample (n = 1,592)	Percentage of Respondents
1	Infrastructure/data center	31%
2	None	13%
3	Legacy systems	9%
4	Enterprise resource planning	5%
5	Optimizing operations — BSS/OSS	4%
6	Hosting services/server	4%
7	Software licensing/maintenance/support	4%
8	Software development/upgrades	3%
9	Communication/connectivity	3%
10	People/talent management	2%

Base: All answering, excludes DK; n varies by segment.
Q. What are the technology areas where your organization will be reducing funding by the highest amount in 2018 compared to 2017?

Source: Gartner (October 2017)

Analysis of Data

ERP being high on both the increase *and* the decrease lists may seem contradictory on the face of it. However, ERP projects are big, important and long-cycle investments for asset-intensive organizations, but they are not a continuous spend. These companies will do an ERP upgrade or install project, fund it accordingly, and then reduce the funding in the following years — 16% increasing, 14% decreasing and 70% stable. Based on this result, we predict asset-intensive organizations upgrade, replace or extend their ERP every six or seven years.

Recommendation

CIOs of asset-intensive organizations should:

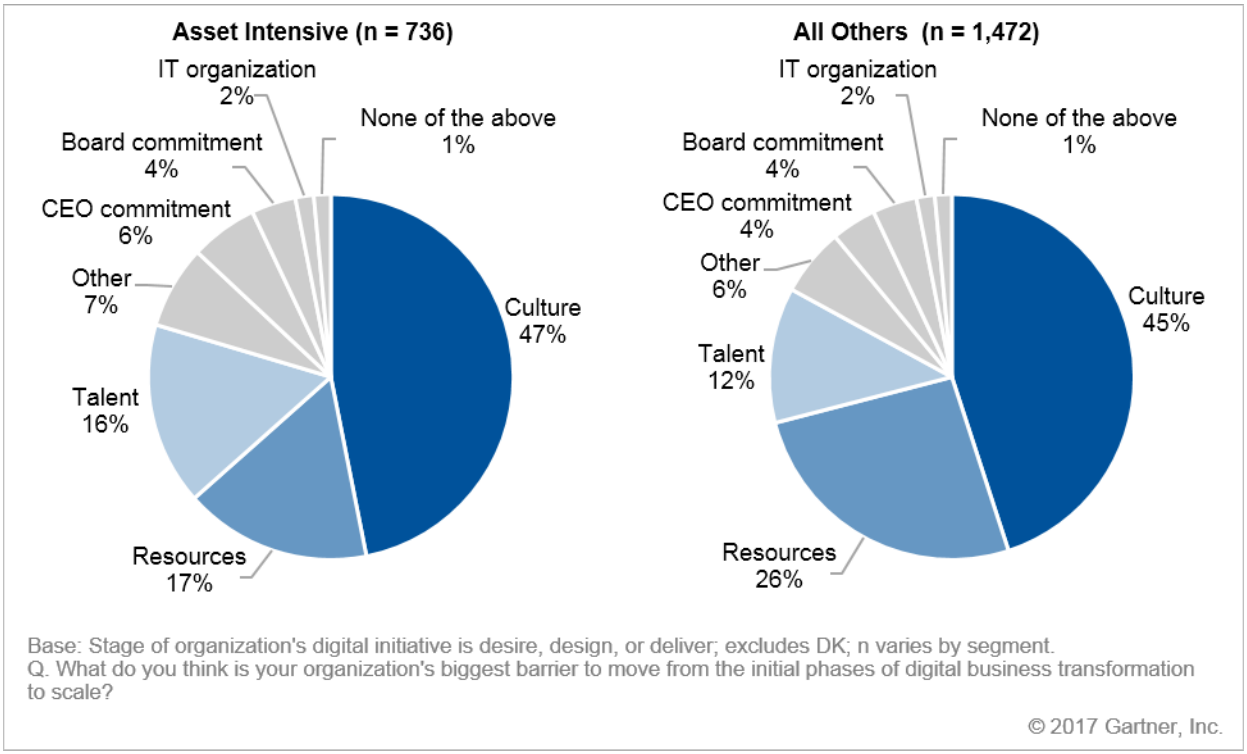
- Plan out ERP upgrades with long-term forecasting and budgeting. They are significant investments, but these companies benefit from ERP more than many other industries, so they need to stay the course.

Barriers to Digital Transformation

To understand what obstacles lie in the way we asked: "What do you think is your organization's biggest barrier to moving from the initial phases of digital business transformation to scale?"

While much of the response was similar to organizations that are not asset-intensive, the main revelation was that asset-intensive organizations rank resources as less of an obstacle than did other industries, and rank talent as significantly more of an obstacle (see Figure 5).

Figure 5. Barriers to Scaling Digital Business Transformation



Source: Gartner (October 2017)

Analysis of Data

Across all industries, culture is the biggest barrier. Where asset-intensive industries differ is that the lack of resources as an obstacle is mentioned less than it is by organizations that are not asset-intensive, and lack of talent was indicated by a greater proportion of the sample. Essentially, what CIOs are telling us is that they have the people, just not the right skills in the right areas. As we move to more digital business and automation and leverage the IoT, new skills and talent need to be fostered in the organization in response. It is not enough to throw people at problems and projects; they have to be the right people armed with the right skills and talent.

Recommendations

CIOs of asset-intensive organizations should:

- Work on culture change, as this constricts digital business transformation more than any other obstacle. All too often, CIOs have culture change thrust upon them. Enterprises initiate a transformation, such as a merger, acquisition, spin-off or new line of business, with little or no regard to culture, and with very little advance warning to the organization. In such circumstances, IT finds itself quickly immersed in the technical and personnel aspects of the transformation (such as consolidating teams and systems), often with little focus reserved for the cultural changes required (see "Culture Change Is Easier Than You Think").

- Quantify the skills demand that will be placed on their organization from near-term and longer-term projects. This should then be converted into a training plan to reskill the workforce, as well as to update the hiring criteria for any growth or replacement of resources to ensure the skill mix continues to evolve (see "Develop the Competencies Your Workforce Needs for the Digital Ecosystem").

Methodology

The 2018 Gartner CIO Survey was conducted via an online survey from 20 April to 26 June 2017 among Gartner Executive Programs members and other CIOs. Qualified respondents were the most senior IT leader (CIO) for their overall organization or a part of their organization (e.g., a business unit or region). The total sample is 3,160, with representation from all geographies and industry sectors (public and private).

The survey was developed collaboratively by a team of Gartner analysts and was reviewed, tested and administered by Gartner's Research Data and Analytics team.

Definitions

Asset-intensive industries include manufacturing, natural resources, transportation and utilities.

IT: Information technology, broadly defined, includes software applications (systems) that manage information about assets used to optimize corporate performance or meet regulatory requirements. These systems, transactional in nature, are frequently based on relational database management systems (RDBMSs). They can be horizontal and applicable across multiple industries (e.g., administrative processes, such as HR, payroll and accounting). Subcategories are vertical- and industry-specific (such as applicable to utilities or manufacturing processes).

OT: Operational technology includes systems that deal with the running of the assets. They are used to ensure system integrity and meet system constraints. They are event-driven and, frequently, are "real-time" software applications or devices with embedded software. They control technology processes through devices or sensors used to manage the production or delivery processes. Mission-critical systems have requirements that frequently exceed those of "standard solutions" available for IT.

IoT: The Internet of Things is the network of dedicated physical objects (things) that contain embedded technology to sense or interact with their internal state or their external environment. The IoT comprises an ecosystem that includes things, communications, applications and data analysis.

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"Hints and Tips on Using Gartner Numbers When Reviewing IT Spending Plans"

"Develop the Competencies Your Workforce Needs for the Digital Ecosystem"

"Culture Change Is Easier Than You Think"

"Postmodern ERP Is a Vital Foundation for Digital Business, and ERP Leaders Must Implement a Postmodern ERP Strategy"

"Mapping a Route to Asset Management and Reliability"

"The Internet of Things Is Accelerating Asset Performance Management Innovation and Adoption"

"Cloud-Based Alternatives Are Changing the Enterprise Asset Management Market"

Evidence

This report is based on Gartner's annual survey of CIOs (see Survey Objective and Methodology sections for details), which was conducted between 20 April and 26 June 2017. A total of 3,160 respondents participated, including 1,024 from asset-intensive companies. The respondents were members of Gartner Executive Programs and other IT leaders.

More on This Topic

This is part of an in-depth collection of research. See the collection:

- 2018 CIO Agenda: Industry Insights Overview

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