2023 Global Digital Twin Survey Report Vertical Breakdown:
Banking, Financial Services, and Insurance

ALTAIR

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Introduction

Altair set out to paint the most comprehensive picture of the digital twin landscape by surveying more than 2,000 industry professionals from around the world. With that data, we compiled a detailed report that showed how industry professionals viewed, adopted, and used the technology, how people of different organizational stature understood digital twins, how organizations were using the technology to further their sustainability efforts, and much more. From that data, we're now showcasing the banking, financial services, and insurance (BFSI) sector and its relationship to digital twin technology.

In this report, we'll examine the BFSI sector to understand how the industry has used, is using, and will use digital twin technology. As the data suggests, the industry is highly knowledgeable about digital twin technology and believes it to be a critical aspect of their current and future operations. Beyond traditional applications of "physical" digital twins (such as virtual models of a wind turbine or automotive chassis), the technology can be used to simulate a variety of risk scenarios, create virtual customer profiles and replicas of systems, and much more. This expands the application of digital twins and makes it a more versatile tool than most realize. The data shows digital twin technology is helping organizations predict and monitor various aspects related to consumer behavior, fraud, risk, and much more within the financial industry. Seeing digital twin in action within financial applications shows how powerful the technology is – and shows it is only set to become more important in the years and decades to come.

Read on to discover all things digital twin technology as it pertains to BFSI.

The BFSI industry is digital twin savvy – **97% of respondents say the technology is critical to their operations.**

KEY TAKEAWAYS

Key Takeaways

Before diving into the detailed results, here are some of the key findings the data presented.

The BFSI industry is already using digital twin technology.
71% of BFSI respondents said their organization already leverages digital twin technology. And overall, BFSI respondents were the most likely industry group to say they are "highly knowledgeable about digital twin technology" at 64% – a number 14 points higher than the overall survey average (50%).

Digital twin technology is very important for the BFSI industry.
Of BFSI respondents who said their organization currently leverages digital twin technology, 97% said the technology was "important" to their organization – in line with the overall survey average. But more crucially, 71% of those respondents said digital twin was "very important" to their organization – a proportion tied for the highest in the survey and eight points higher than the overall survey average.

The BFSI industry is using digital twin technology for behavioral modeling more than any other industry. BFSI respondents – by far – were the most likely to say they use digital twin technology in behavioral modeling (i.e. psychological, personality/behavior assessments and predictions) at 50%, 20 points higher than the overall survey average.
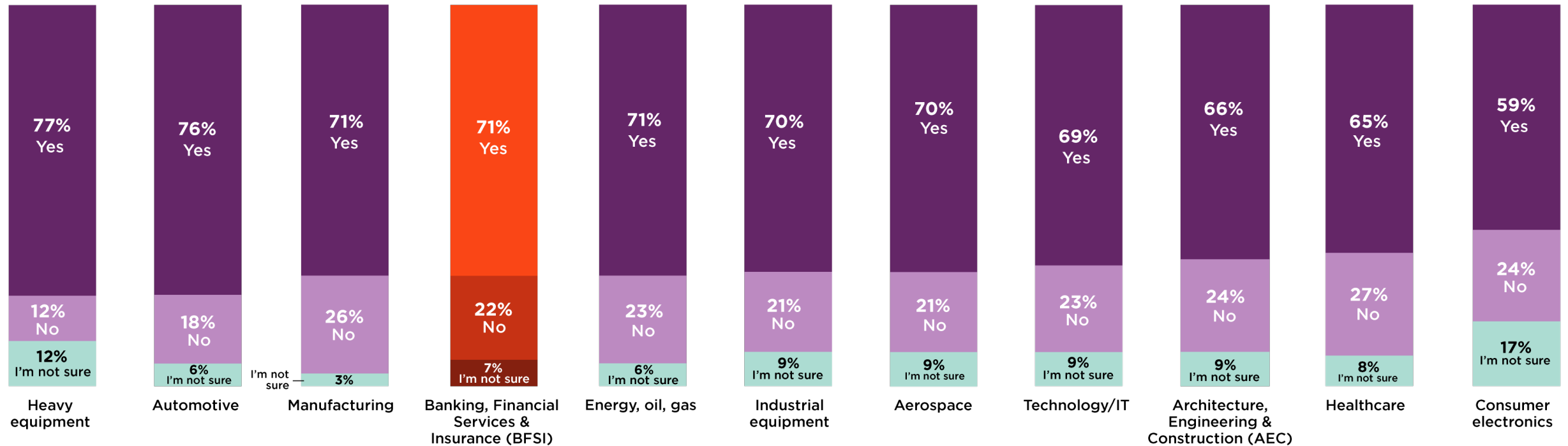
SECTION 1

DIGITAL TWIN TECHNOLOGY ADOPTION AND USAGE

Of the BFSI respondents, 71% said their organization already leverages digital twin technology.
Among other industries within the survey's 2,007 respondents, this proportion was two points higher than the overall average (69%).

▶ **Does your organization leverage digital twin technology (as defined previously)?**

Heavy equipment	Automotive	Manufacturing	Banking, Financial Services & Insurance (BFSI)	Energy, oil, gas	Industrial equipment	Aerospace	Technology/IT	Architecture, Engineering & Construction (AEC)	Healthcare	Consumer electronics
77% Yes	76% Yes	71% Yes	71% Yes	71% Yes	70% Yes	70% Yes	69% Yes	66% Yes	65% Yes	59% Yes
12% No	18% No	26% No	22% No	23% No	21% No	21% No	23% No	24% No	27% No	24% No
12% I'm not sure	6% I'm not sure	3% I'm not sure	7% I'm not sure	6% I'm not sure	9% I'm not sure	9% I'm not sure	9% I'm not sure	9% I'm not sure	8% I'm not sure	17% I'm not sure

Overall, **BFSI respondents were the most likely industry group to say they are "highly knowledgeable about digital twin technology" at 64% – 14 points higher than the overall survey average (50%).** BFSI respondents were also the second least 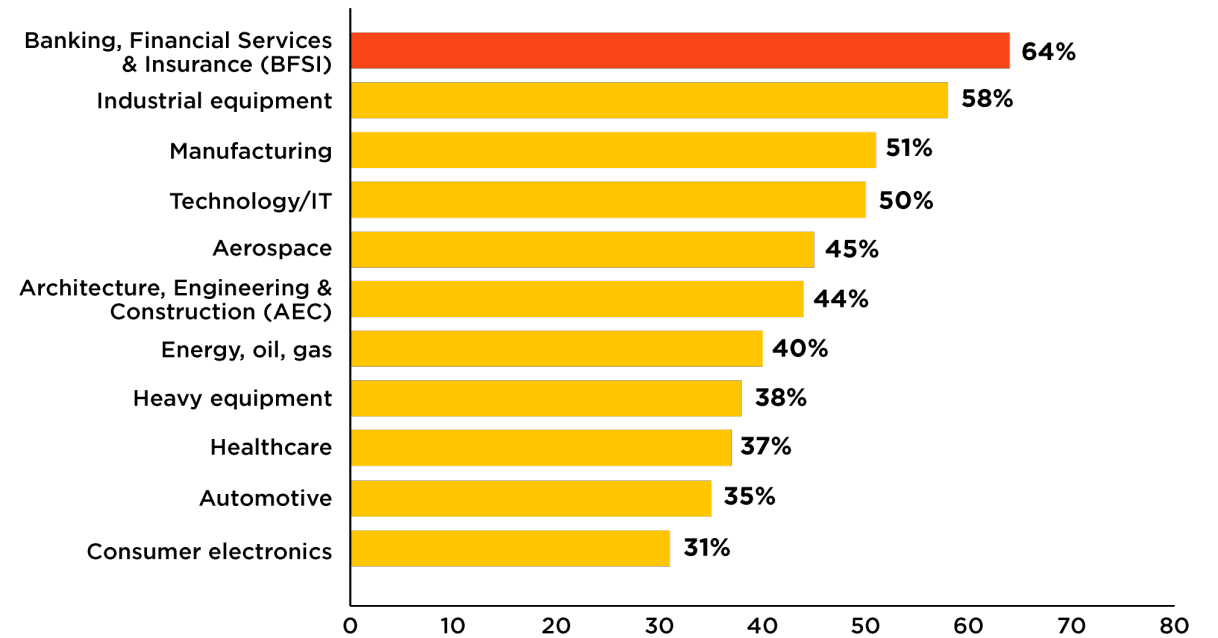likely group to say they "find understanding digital twins to be confusing" at 8%, behind only the industrial equipment sector (6%).

▶ **Which of the following statements best describes how you feel about digital twin technology?**

I find understanding digital twin solutions to be confusing

Industry	%
Consumer electronics	24%
Aerospace	18%
Healthcare	17%
Automotive	16%
Technology/IT	13%
Heavy equipment	12%
Energy, oil, gas	11%
Architecture, Engineering & Construction (AEC)	11%
Manufacturing	10%
Banking, Financial Services & Insurance (BFSI)	8%
Industrial equipment	6%
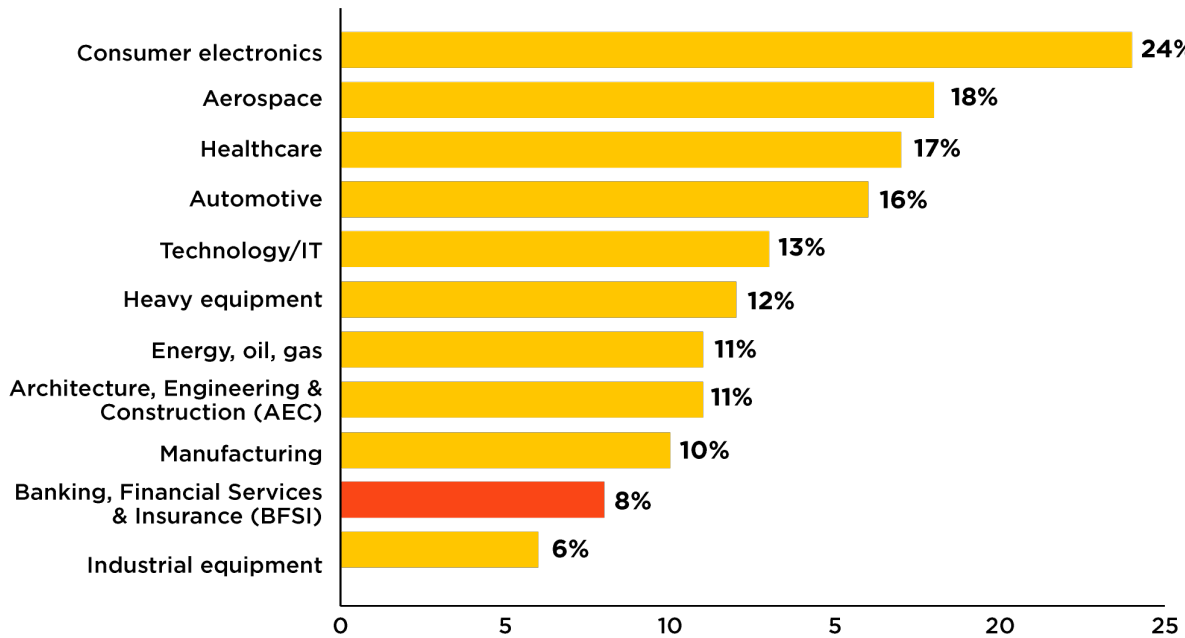
I am highly knowledgeable about digital twin solutions

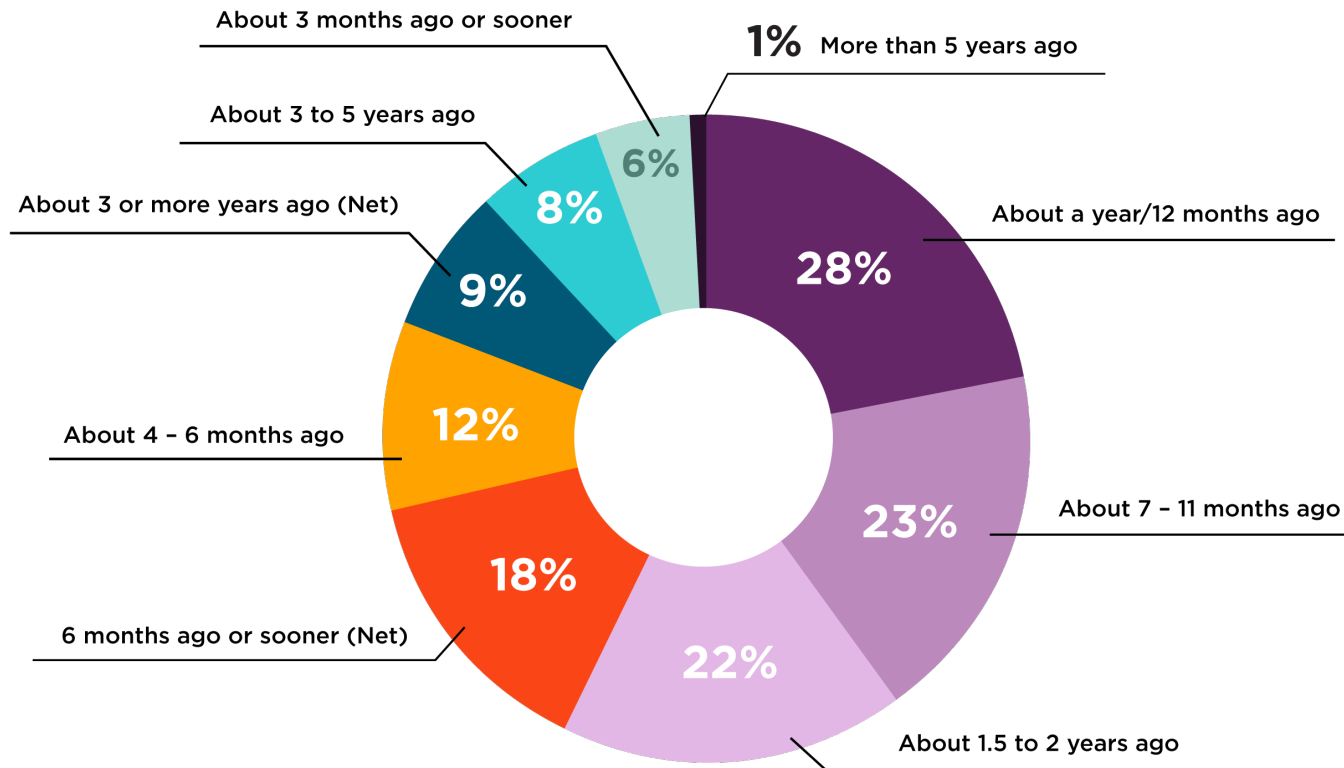| Industry	%
Banking, Financial Services & Insurance (BFSI)	64%
Industrial equipment	58%
Manufacturing	51%
Technology/IT	50%
Aerospace	45%
Architecture, Engineering & Construction (AEC)	44%
Energy, oil, gas	40%
Heavy equipment	38%
Healthcare	37%
Automotive	35%
Consumer electronics	31%

Of BFSI respondents who said their organization currently leverages digital twin technology, 97% said the technology was "important" to their organization – in line with the overall survey average. But more crucially, **71% of those respondents said digital twin was "very important" to their organization – a proportion tied for the highest in the survey (along with the consumer electronics industry) and eight points higher than the overall survey average.**

▶ **How important are digital twin solutions to your organization?**

Very important

71%	Banking, Financial Services & Insurance (BFSI)	**61%**	Aerospace
71%	Consumer electronics	**58%**	Manufacturing
68%	Industrial equipment	**55%**	Heavy equipment
66%	Technology/IT	**43%**	Automotive
63%	Healthcare	**39%**	Energy, oil, gas
63%	Architecture, Engineering & Construction (AEC)		
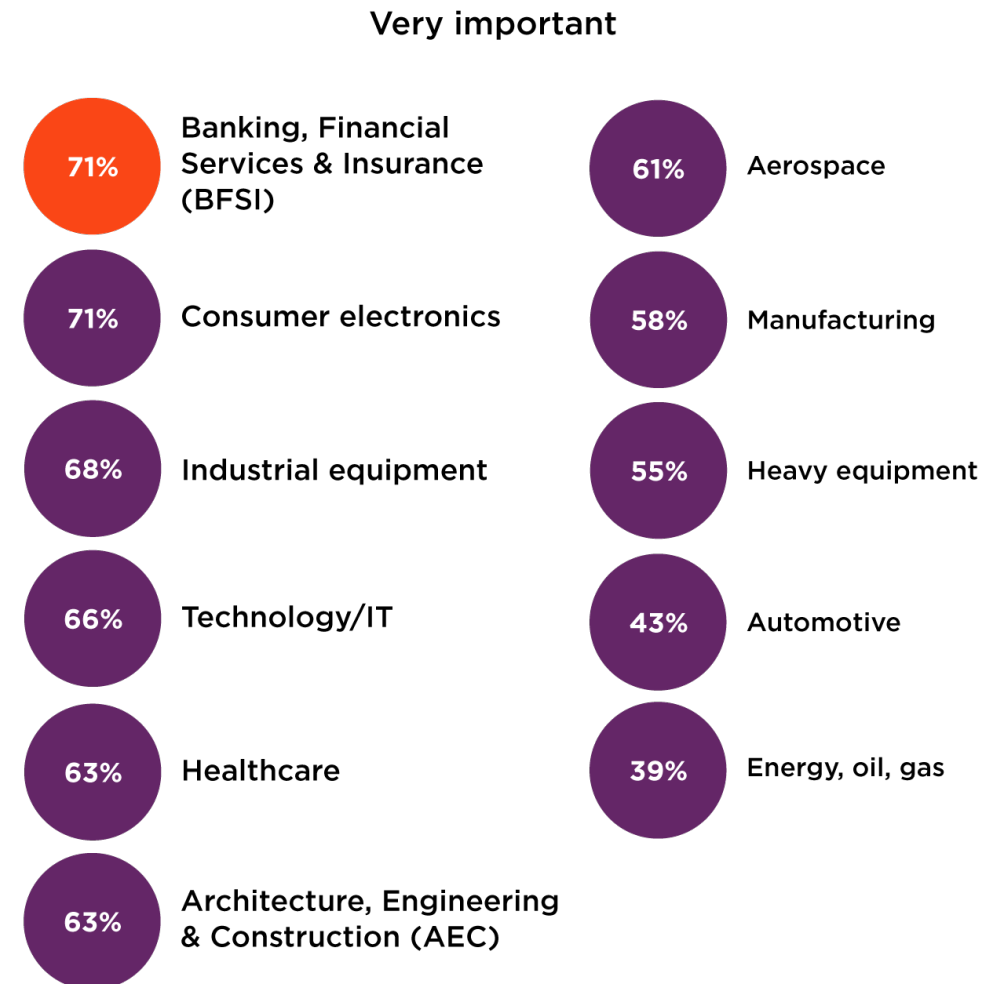
Of BFSI respondents who said their organization already uses digital twin technology, 18% said their organization began investing in digital twins within the past six months or sooner; 9% said investment began three or more years ago. Most adoption timeframe statistics for BFSI track closely to the overall survey averages.
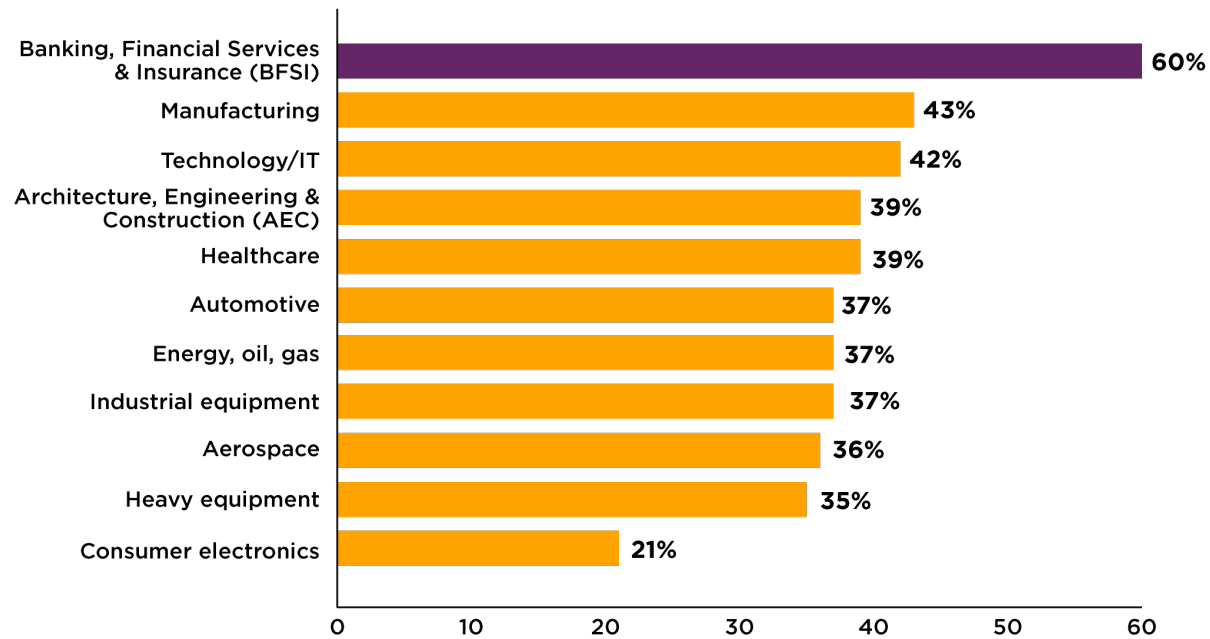
▶ **When did your organization begin to invest in digital twin solutions?**

About 3 months ago or sooner

About 3 to 5 years ago

About 3 or more years ago (Net)

About 4 – 6 months ago

6 months ago or sooner (Net)

1% More than 5 years ago

About a year/12 months ago

About 7 – 11 months ago

About 1.5 to 2 years ago
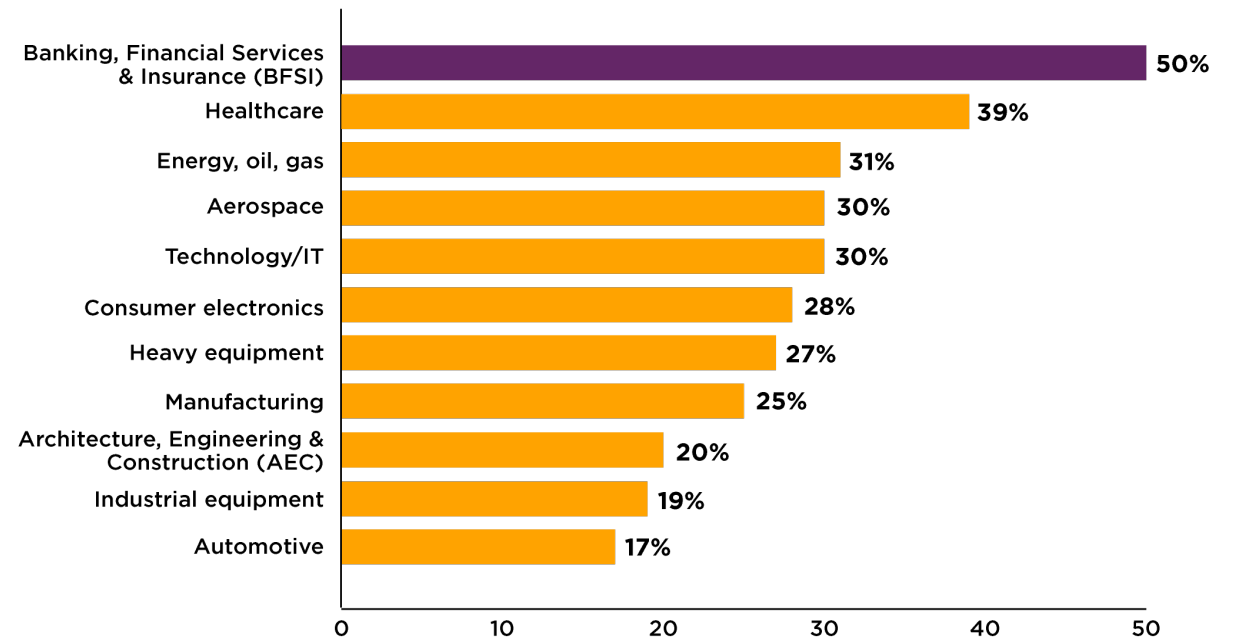
6%

8%

9%

12%

18%

22%

23%

28%

BFSI respondents said they were most likely to use digital twin technology in operations (60%), a proportion 18 points higher than the overall survey average. In addition, **BFSI respondents – by far – were the most likely to say they use digital twin technology in behavioral modeling (i.e. psychological, personality/behavior assessments and predictions) at 50%, 20 points higher than the overall survey average.**

▶ **In what areas is your organization most likely to use digital twin technology?**
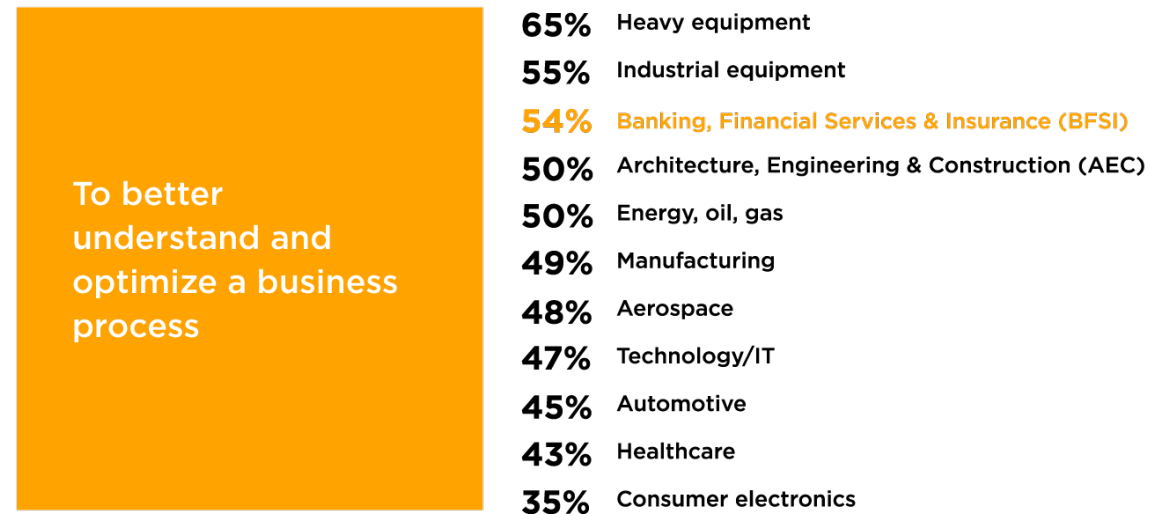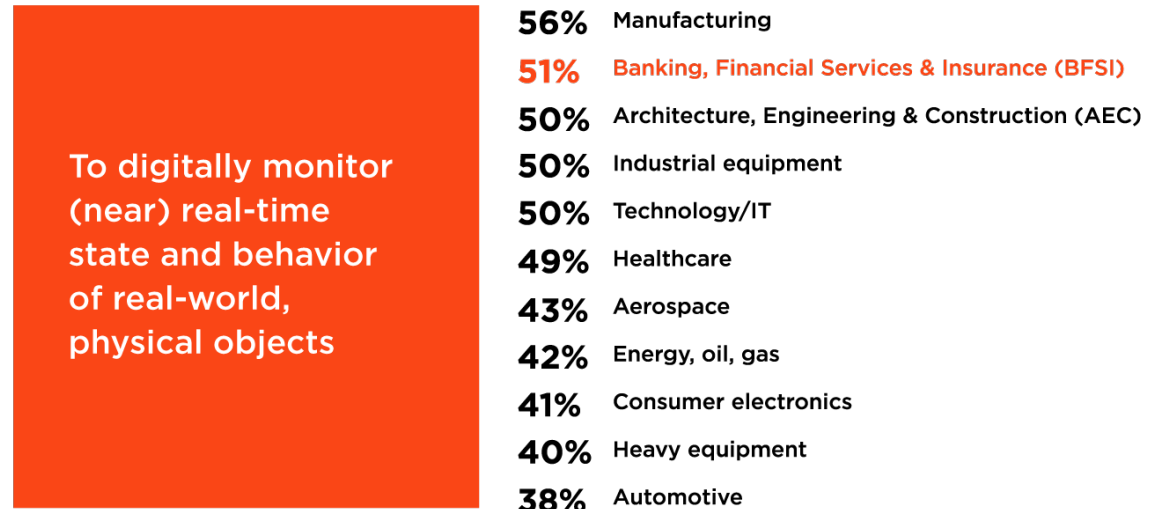
Operations

Banking, Financial Services & Insurance (BFSI)	60%
Manufacturing	43%
Technology/IT	42%
Architecture, Engineering & Construction (AEC)	39%
Healthcare	39%
Automotive	37%
Energy, oil, gas	37%
Industrial equipment	37%
Aerospace	36%
Heavy equipment	35%
Consumer electronics	21%

Behavioral modeling (i.e. psychological, personality assessments)

Banking, Financial Services & Insurance (BFSI)	50%
Healthcare	39%
Energy, oil, gas	31%
Aerospace	30%
Technology/IT	30%
Consumer electronics	28%
Heavy equipment	27%
Manufacturing	25%
Architecture, Engineering & Construction (AEC)	20%
Industrial equipment	19%
Automotive	17%

Lastly, below we can see how BFSI respondents said they used digital twin technology. BFSI respondents were most likely to use digital twin technology to "better understand and optimize a business process" (54%), "digitally monitor (near) real-time state and behavior of real-world, physical objects" (51%), and "predict the future state and behavior of physical assets using predictive analytics" (51%). **It's important to note that these uses are skewed toward monitoring and predicting, which are imperative in the BFSI industry.** These capabilities allow BFSI organizations to do things like prevent fraud, monitor and predict customer/borrower behavior, track customer satisfaction, and more. The proportions of these uses were slightly higher than the overall survey average in all three instances.

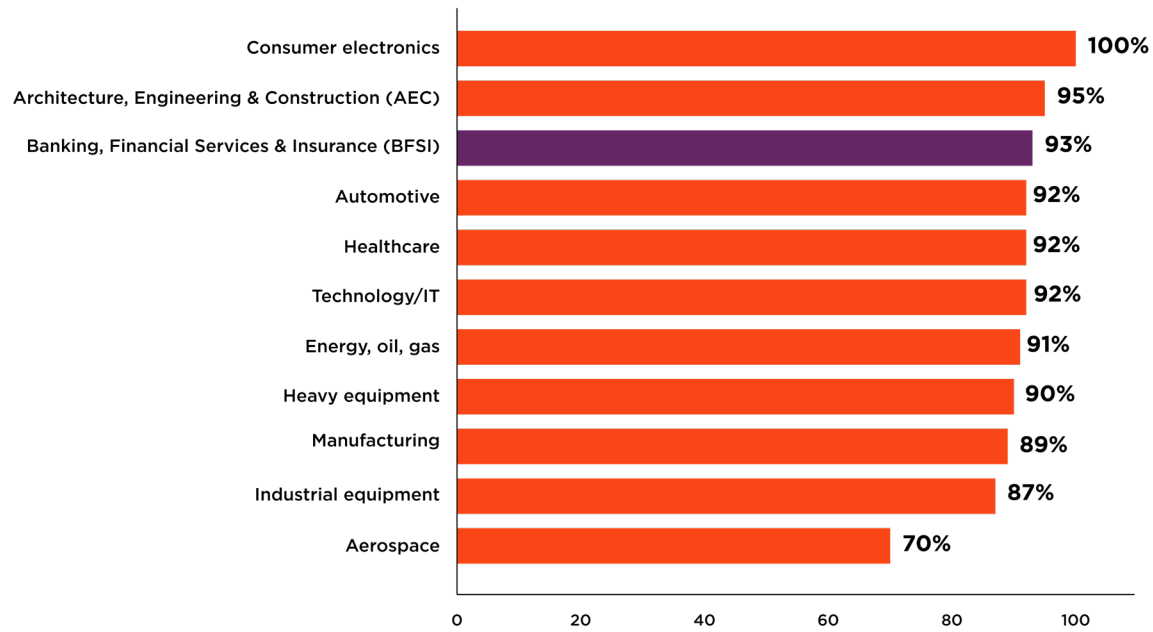▶ **How does your organization use digital twin technology?**

To digitally monitor (near) real-time state and behavior of real-world, physical objects

56%	Manufacturing
51%	Banking, Financial Services & Insurance (BFSI)
50%	Architecture, Engineering & Construction (AEC)
50%	Industrial equipment
50%	Technology/IT
49%	Healthcare
43%	Aerospace
42%	Energy, oil, gas
41%	Consumer electronics
40%	Heavy equipment
38%	Automotive

To predict the future state and behavior of physical assets using predictive analytics

55%	Industrial equipment
51%	Banking, Financial Services & Insurance (BFSI)
50%	Manufacturing
50%	Architecture, Engineering & Construction (AEC)
46%	Technology/IT
45%	Heavy equipment
44%	Energy, oil, gas
43%	Healthcare
43%	Automotive
41%	Consumer electronics
22%	Aerospace

To better understand and optimize a business process

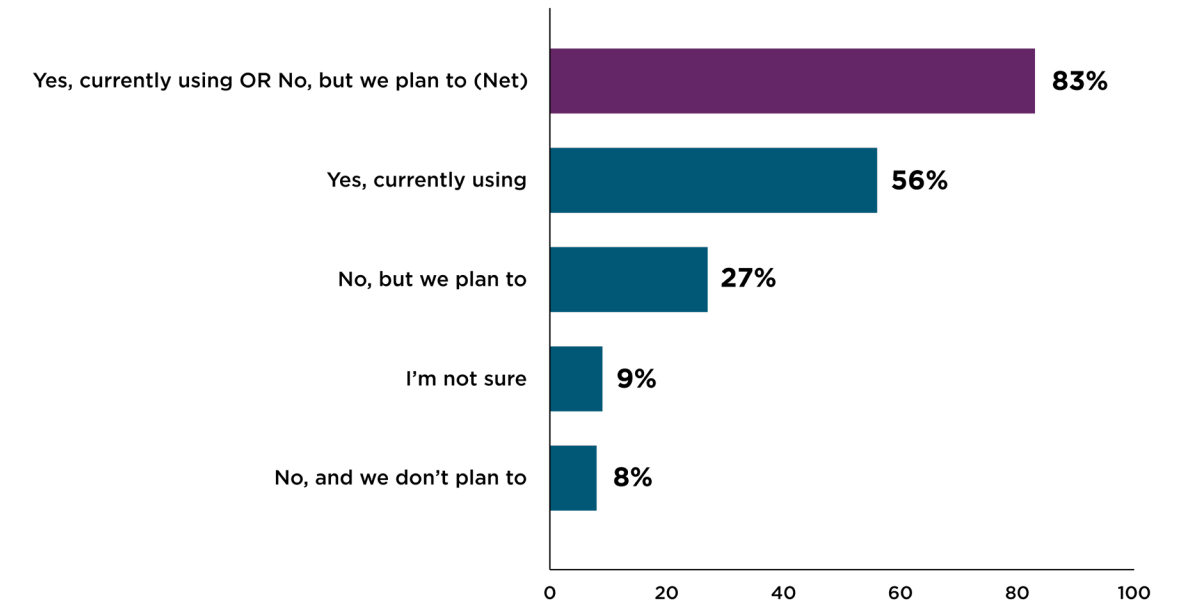|	
65%	Heavy equipment
55%	Industrial equipment
54%	Banking, Financial Services & Insurance (BFSI)
50%	Architecture, Engineering & Construction (AEC)
50%	Energy, oil, gas
49%	Manufacturing
48%	Aerospace
47%	Technology/IT
45%	Automotive
43%	Healthcare
35%	Consumer electronics

SECTION 2

IMPACT OF DIGITAL TWIN TECHNOLOGY

Much like other industries, BFSI respondents said digital twin technology has made a big impact on their organization and operations. **93% of BFSI respondents whose organization currently uses digital twin said the technology helps them create more sustainable products and processes** – the third-highest proportion among the other industries within the overall survey.

Moreover, **83% of BFSI respondents say their organization is either currently using, or plans to use, digital twin to reach their sustainability objectives;** 56% of those respondents said their organization is currently using the technology. Both these statistics are in line with overall survey averages.

▶ Has digital twin technology helped your organization create more sustainable products or processes?

▶ Is your organization using digital twin technology to reach its overall sustainability goals?

Industry	%
Consumer electronics	100%
Architecture, Engineering & Construction (AEC)	95%
Banking, Financial Services & Insurance (BFSI)	93%
Automotive	92%
Healthcare	92%
Technology/IT	92%
Energy, oil, gas	91%
Heavy equipment	90%
Manufacturing	89%
Industrial equipment	87%
Aerospace	70%

Response	%
Yes, currently using OR No, but we plan to (Net)	83%
Yes, currently using	56%
No, but we plan to	27%
I'm not sure	9%
No, and we don't plan to	8%

On the operational side of sustainability, **76% of BFSI respondents said digital twin technology has helped their organization's products and/or processes become more sustainable** by making their products more energy efficient and/or less wasteful – a proportion only trailing the industrial equipment sector (85%).
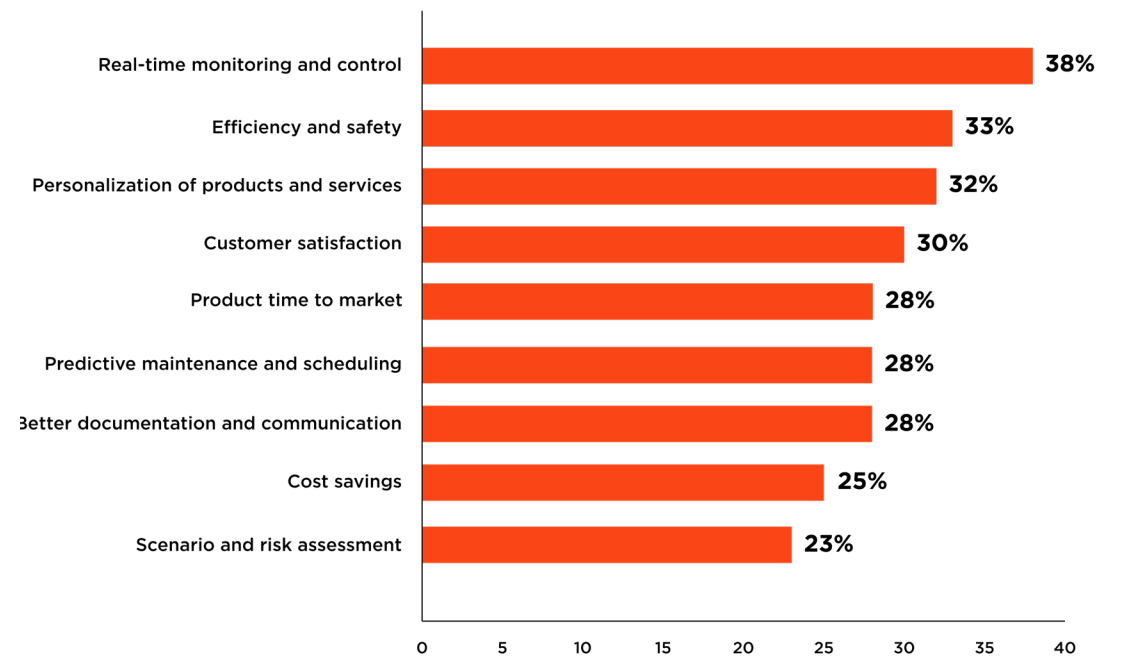
▶ **Thinking of your organization's products or processes that are more sustainable thanks to digital twin technology, how have your organization's products or processes become more sustainable?**
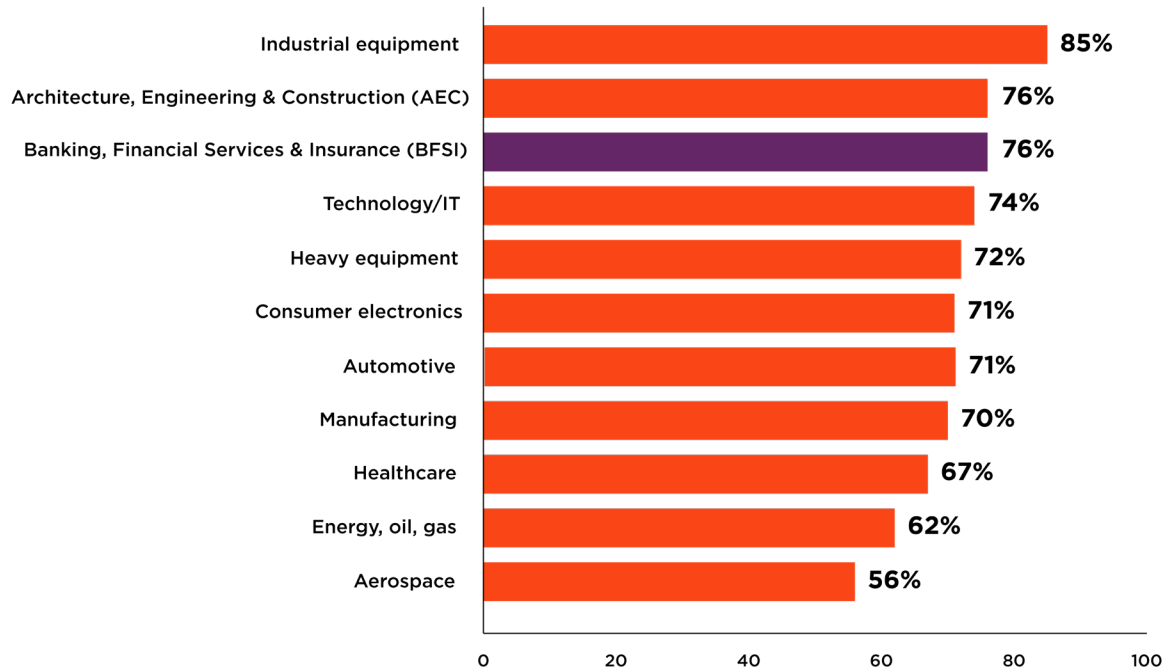
Below we can see what BFSI respondents said digital twin had the greatest impact on. It's important to highlight that BFSI respondents were the most likely of any industry to say "personalization of products and services" at 32%. On the same note, this data also makes clear the industry's emphasis on "real-time monitoring and control" at 38%. **As mentioned earlier, both these aspects are important facets of the BFSI industry, especially when tied with predictive analytics regarding customer behavior.**

▶ **At your organization, which of the following have digital twins had the greatest positive impact on?**
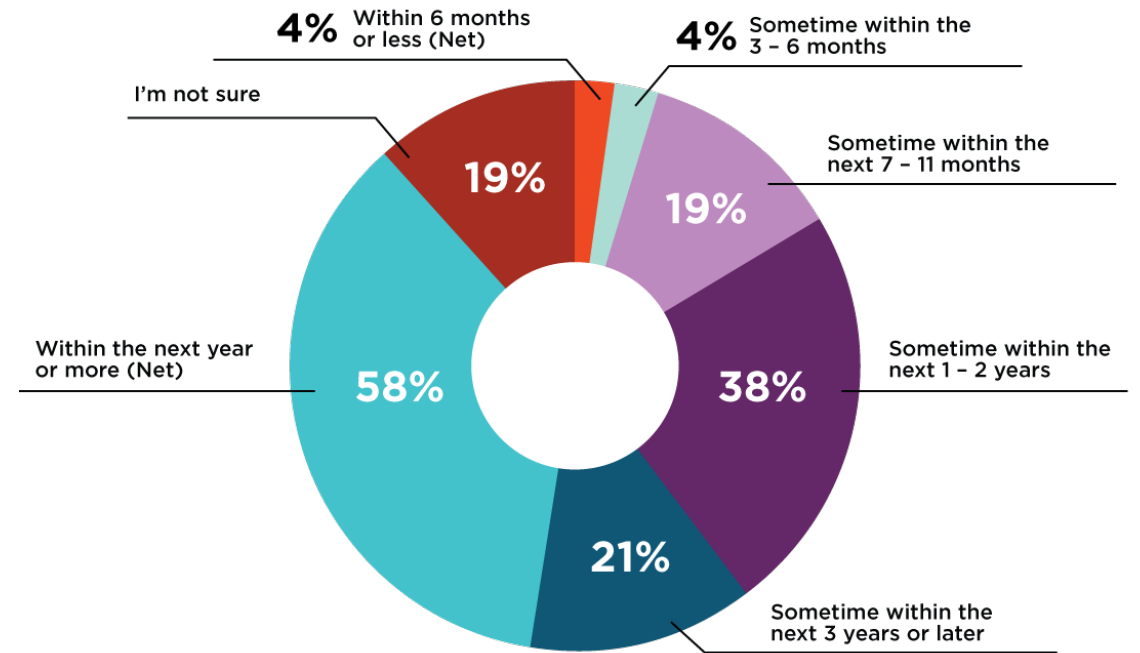
More energy efficient and/or less wasteful (Net)

Industry	Percentage
Industrial equipment	85%
Architecture, Engineering & Construction (AEC)	76%
Banking, Financial Services & Insurance (BFSI)	76%
Technology/IT	74%
Heavy equipment	72%
Consumer electronics	71%
Automotive	71%
Manufacturing	70%
Healthcare	67%
Energy, oil, gas	62%
Aerospace	56%

Impact Area	Percentage
Real-time monitoring and control	38%
Efficiency and safety	33%
Personalization of products and services	32%
Customer satisfaction	30%
Product time to market	28%
Predictive maintenance and scheduling	28%
Better documentation and communication	28%
Cost savings	25%
Scenario and risk assessment	23%

SECTION 3
EXPECTATIONS OF DIGITAL TWIN IN THE BFSI SECTOR

The data shows us that the BFSI industry is no stranger to digital twin technology – in fact, the industry is very comfortable with what it is, how it can be used, and what impact it can have. Let's further examine where the BFSI industry thinks the technology will go and what it will do in the coming years.
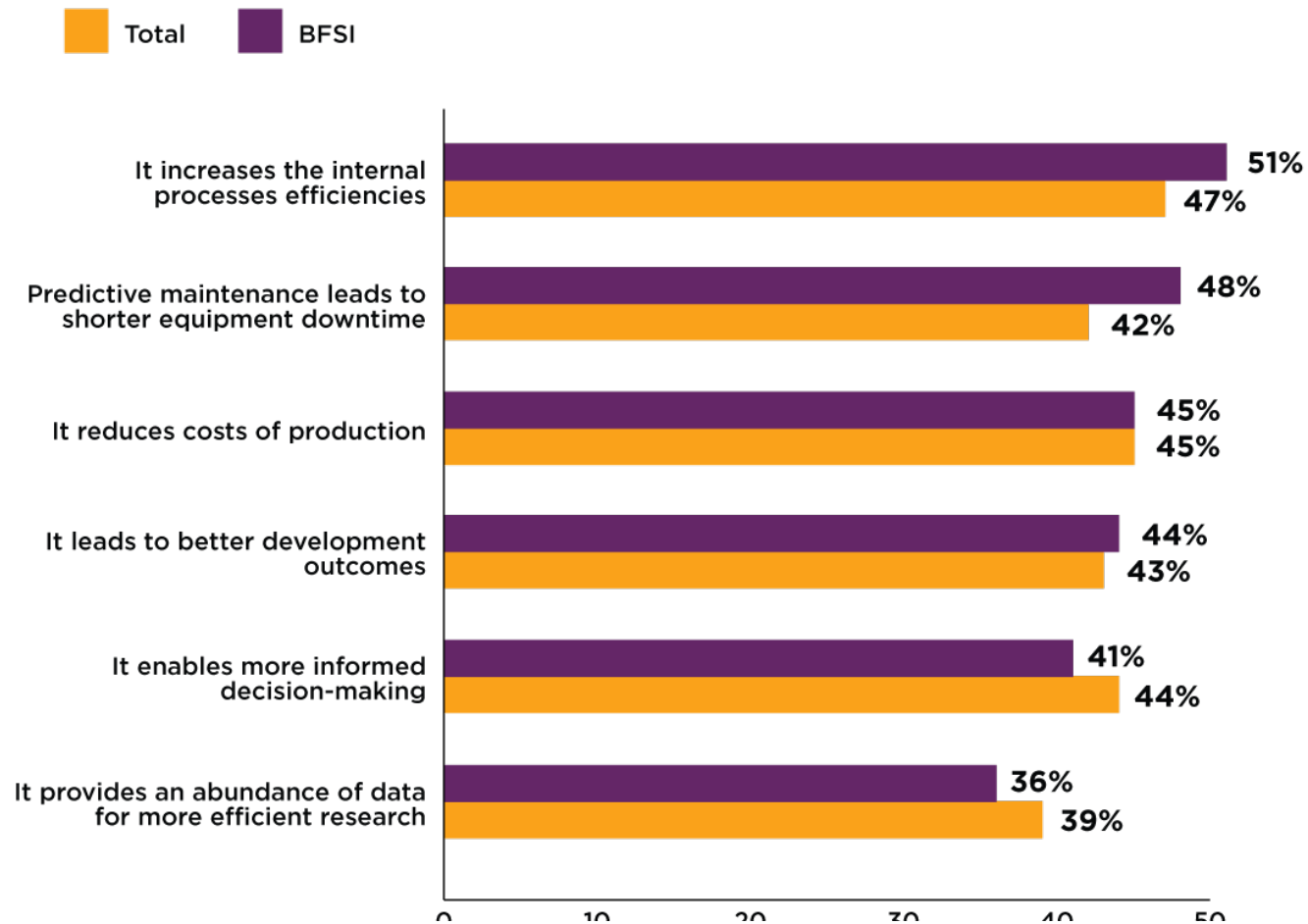
To start, of BFSI respondents who said their organization **doesn't** currently leverage digital twin technology, **just 4% expect their organization to adopt digital twin technology in the next six months or sooner.** 58% said they expect their organization to adopt the technology in the next year or more, the second-highest proportion of any industry and 14 points above the overall survey average.

▶ **When do you expect your organization to adopt digital twin technology?**

4% Within 6 months or less (Net)

4% Sometime within the 3 – 6 months

I'm not sure

19%

19% Sometime within the next 7 – 11 months

Within the next year or more (Net)

58%

38% Sometime within the next 1 – 2 years

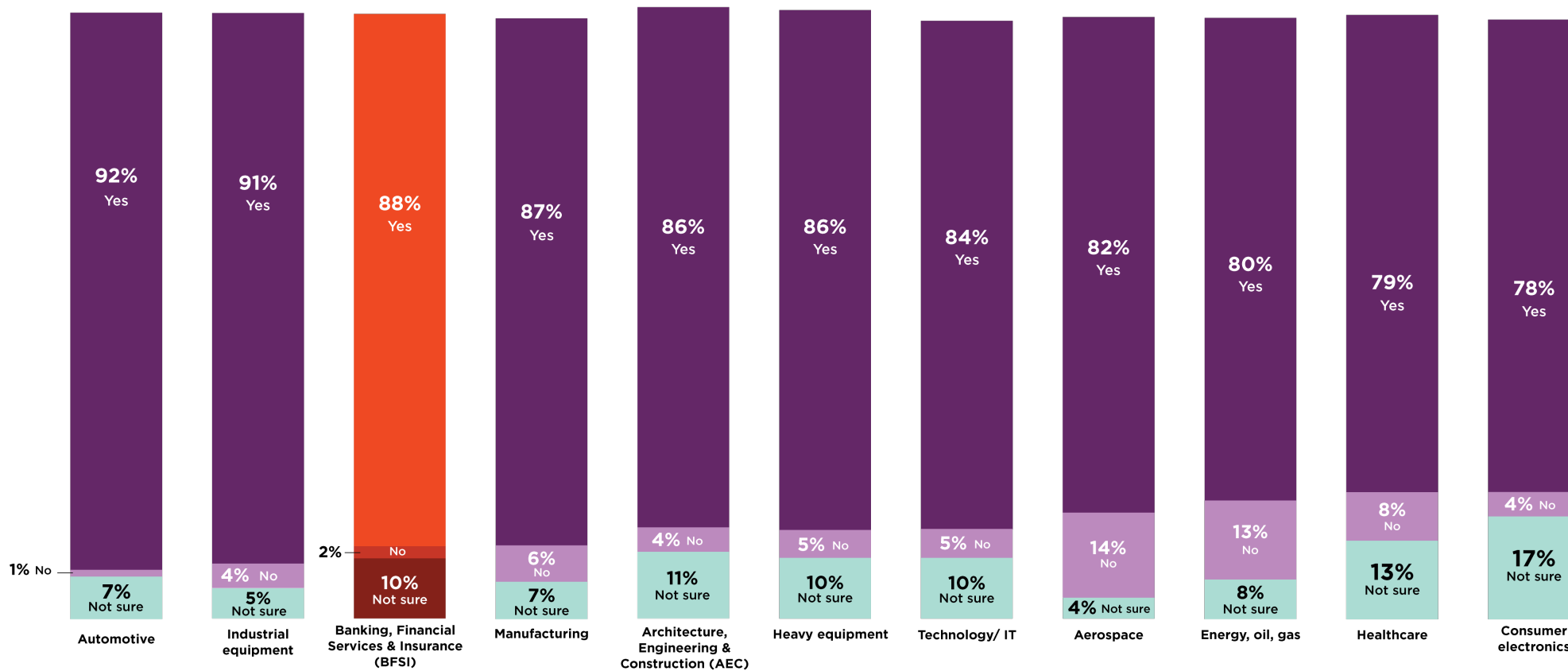**21%** Sometime within the next 3 years or later

Below, we can see what non-management BFSI respondents wished their leadership better understood about digital twin technology. Most of these percentages track with overall survey averages.

▶ **What do you wish your leadership understood about the benefits of digital twins?**

Legend:
- Total
- BFSI

Category	BFSI	Total
It increases the internal processes efficiencies	51%	47%
Predictive maintenance leads to shorter equipment downtime	48%	42%
It reduces costs of production	45%	45%
It leads to better development outcomes	44%	43%
It enables more informed decision-making	41%	44%
It provides an abundance of data for more efficient research	36%	39%

Lastly, the data revealed that **88% of non-management BFSI respondents felt that their leadership would be more likely to invest in digital twin technology if they better understood its benefits,** a number three points higher than the overall survey average.

▶ **Do you believe your leadership would be more likely to invest in digital twin solutions if they better understood the benefits of digital twins?**

Automotive	Industrial equipment	Banking, Financial Services & Insurance (BFSI)	Manufacturing	Architecture, Engineering & Construction (AEC)	Heavy equipment	Technology/ IT	Aerospace	Energy, oil, gas	Healthcare	Consumer electronics
92% Yes	91% Yes	88% Yes	87% Yes	86% Yes	86% Yes	84% Yes	82% Yes	80% Yes	79% Yes	78% Yes
1% No	4% No	2% No	6% No	4% No	5% No	5% No	14% No	13% No	8% No	4% No
7% Not sure	5% Not sure	10% Not sure	7% Not sure	11% Not sure	10% Not sure	10% Not sure	4% Not sure	8% Not sure	13% Not sure	17% Not sure

CONCLUSION

Conclusion

The data suggests that digital twin technology is widespread in the BFSI industry which, more than other industries, understands the technology and believes it's a crucial aspect of their current operations. That shouldn't be a surprise, since digital twin technology gives organizations the ability to assess the impact – positive or negative – of potential changes to the bottom line before making those changes. The combination of this technology and machine learning is extremely powerful, and is especially handy in highly regulated environments where it's not possible to put a model directly into production.

Let's explore some of the benefits of this combination further. Below we can see a rundown of the most important data gathered:

- **71% of BFSI respondents said their organization already leverages digital twin technology.** Among other industries within the survey's 2,007 respondents, this proportion was two points higher than the overall average (69%).

- **BFSI respondents were the most likely industry group to say they are "highly knowledgeable about digital twin technology" at 64% – 14 points higher than the overall survey average (50%).** BFSI respondents were also the second least likely group to say they "find understanding digital twins to be confusing" at 8%, behind only the industrial equipment sector (6%).

- Of BFSI respondents who said their organization currently leverages digital twin technology, **97% said the technology was "important" to their organization** – in line with the overall survey average. But more crucially, **71% of those respondents said digital twin was "very important" to their organization – a proportion tied for the highest in the survey** (along with the consumer electronics industry) and eight points higher than the overall survey average.

- **BFSI respondents – by far – were the most likely to say they use digital twin technology in behavioral modeling** (i.e. psychological, personality/ behavior assessments and predictions) **at 50%,** 20 points higher than the overall survey average.

- 93% of BFSI respondents whose organization currently uses digital twin said the technology helps them create more sustainable products and processes.

- When asked what digital twin has had the greatest impact on, BFSI respondents were the most likely of any industry to say "personalization of products and services" at 32%. On the same note, this data also makes clear the industry's emphasis on "real-time monitoring and control" at 38%. **Both these aspects are important facets of the BFSI industry, especially when tied with predictive analytics regarding customer behavior.**

So what can organizations do to maximize their investment in digital twin technology and how should they utilize it? How will digital twin allow them to gain a competitive edge in the market? Above all, it will allow them to:

- **Access More Data:** Digital twins are valuable sources of data and can have tremendous impact on machine learning projects. Digital twins are constantly getting live updates from the asset, system, scenario, and/or profile they model. The combination of real-time data and consolidated historical data can be used to simulate different scenarios, which generates synthetic data that can be used to train machine learning models.

- **Experiment with Scenarios:** By manipulating digital twins, users can test hundreds or even thousands of possible changes quickly and easily, without any risk of a negative impact on current business. Creating a replica of the financial ecosystem, for example, allows an organization to evaluate the performance of machine learning models under different market conditions, regulatory changes, and/or customer behavior patterns.

- **Expand Use Cases:** Data provided by digital twins and the ability to learn from that data through machine learning opens up new possibilities for organizations to make better decisions, improve processes, and enhance customer satisfaction and engagement. By leveraging data from various sources, such as transaction history, social media, and demographic information, machine learning algorithms can identify individual preferences, risk tolerance, and financial goals. This information can be used to personalize customer experiences, offer tailored product recommendations, and provide customized financial advice.
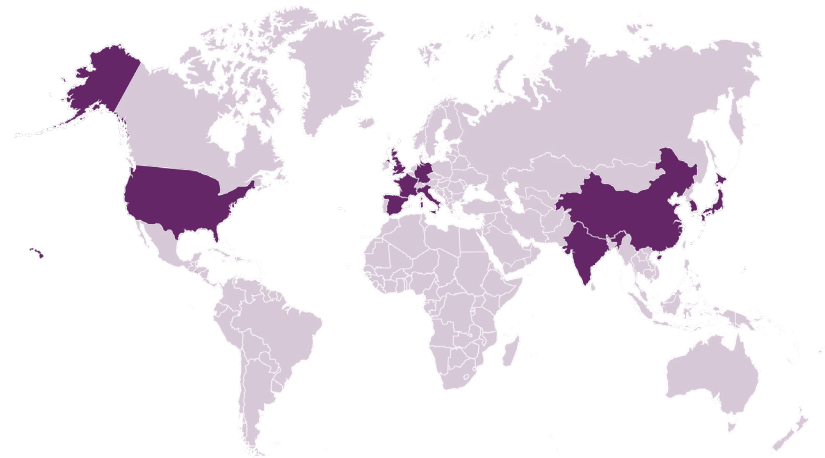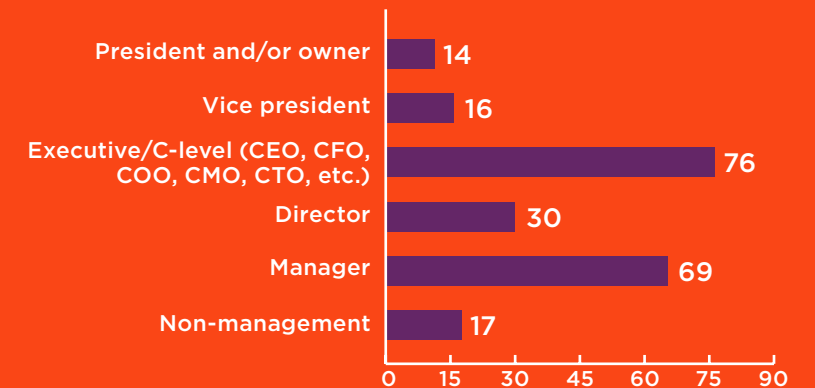
METHODOLOGY

Methodology

Altair commissioned an independent, international online survey of 2,007 professionals employed throughout many target industries who perform job functions related to data science, IoT and analytics, software engineering, research and development (R&D), engineering, information technology (IT) and information systems (IS), product development, and executive management. While the original survey targeted 11 key industries, this report is focused solely on the 222 respondents from the banking, financial services, and insurance (BFSI) sector. Below is a breakdown of the number of BFSI sector respondents by geographic region:

- United States (N=200)
- China (N=200)
- France (N=200)
- India (N=206)

- Germany (N=200)
- United Kingdom (N=201)
- South Korea (N=200)

- Italy (N=200)
- Japan (N=200)
- Spain (N=200)

Below is a breakdown of these 222 respondents' position level within their organizations:

Position	Value
President and/or owner	14
Vice president	16
Executive/C-level (CEO, CFO, COO, CMO, CTO, etc.)	76
Director	30
Manager	69
Non-management	17

The overall sample's margin of error was +/- 2% with a confidence interval of 95%. Fieldwork was conducted in May 2022 by Atomik Research, an independent market research agency.