NAVIGATING ESG CHALLENGES: THE TRANSFORMATIVE POWER OF BLOCKCHAIN IN SUPPLY CHAINS

2024 Edition

The State of Blockchain Transformation in Supply Chain

SettleMint

A word from our CEO

We're seeing blockchain technology's ability to improve operations and the end-user experience grow across a number of different industries and applications today — and which will only continue into the future.

One of the biggest areas blockchain has the potential to transform is supply chain management. From more accurate tracking through increased transparency, to promoting more security in data exchange, blockchain can make supply chains more efficient, resilient, and compliant.

SettleMint has worked with many companies to help bring more efficiency and transparency to their supply chain through blockchain initiatives. However, we wanted to learn more about how IT and digital leaders are integrating blockchain into their supply chain management processes.

We recently surveyed 200 IT directors and executives to learn more about how far they are into their blockchain maturity, what use cases they're transforming with blockchain, and what challenges they still need to overcome.

We hope these findings help you more successfully integrate blockchain into your supply chain management processes and create strategies for implementation in 2024.

Matthew Van Niekerk
Founder & CEO, SettleMint

Index


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GROSS
32.500 KGS
71.650 LBS
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Key findings

These six key findings show how blockchain is transforming supply chain management:

- 86% believe blockchain technology offers a competitive advantage.

  However, only 49% say their executive leadership team are "Blockchain Believers" who see blockchain's potential to transform their organization.

- Security, scalability, and transparency are blockchain's biggest benefits.

  Blockchain also has the most potential to transform use cases in ESG reporting and monitoring, data sharing and interoperability, and streamlined payments.

- 78% have experimented with blockchain technology.

  Of those who have, 71% moved blockchain projects from R&D into production. However, only 38% were fully successful with their project.

- For those who have experimented with blockchain, difficulty integrating it with legacy systems is their biggest challenge.

  Other challenges include finding the right tools and platforms and scalability issues impacted by technical limitations.

- For those who have not yet experimented with blockchain, a lack of budget is the top hurdle to starting.

  Other hurdles include a lack of development resources or a clear understanding of use cases and security or regulatory concerns.

- 71% expect the volume of blockchain projects to increase.

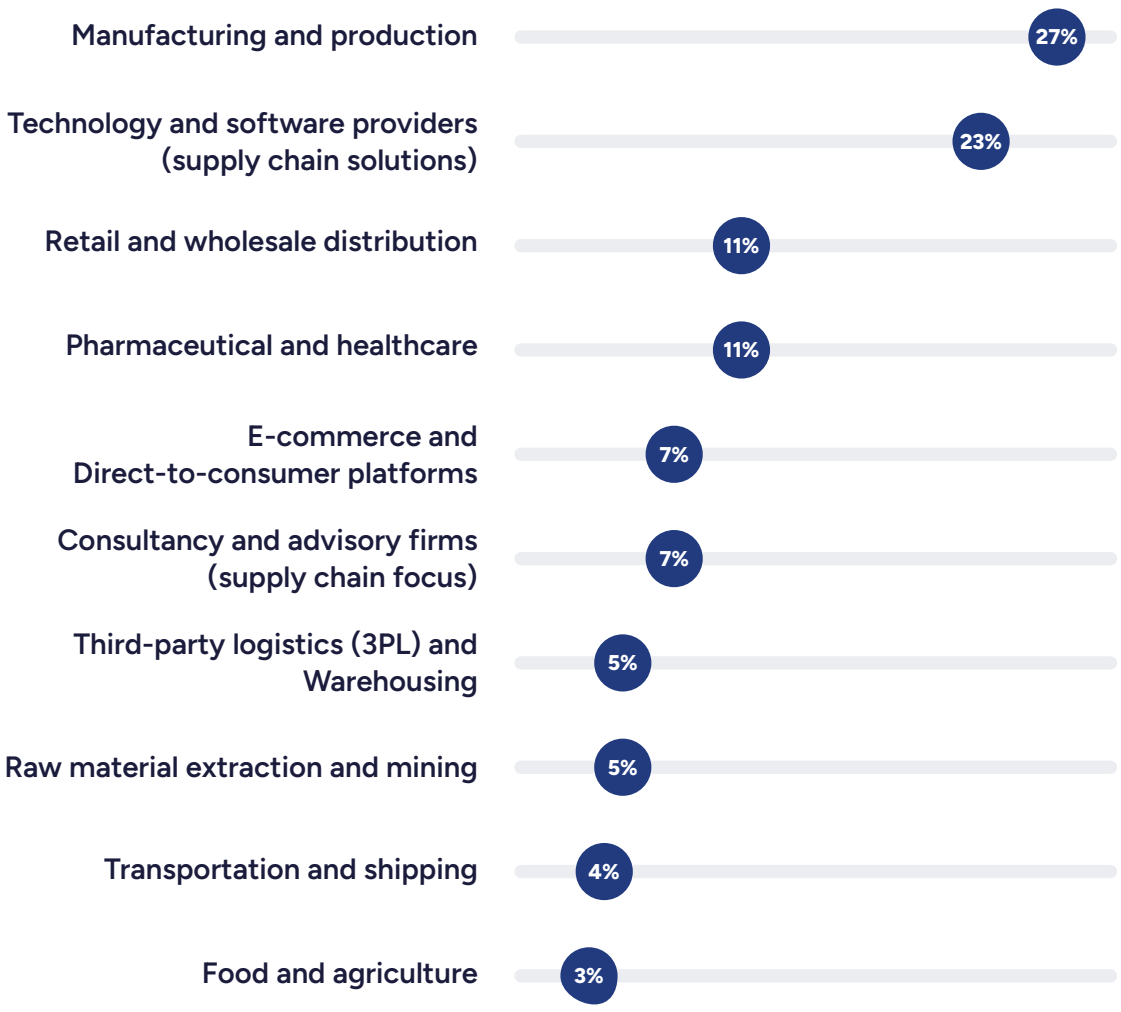
  The biggest factors that will help them succeed with their blockchain projects are access to talent with expertise in blockchain, increased budgets, and enhanced blockchain education and training.

Profile of who we surveyed:

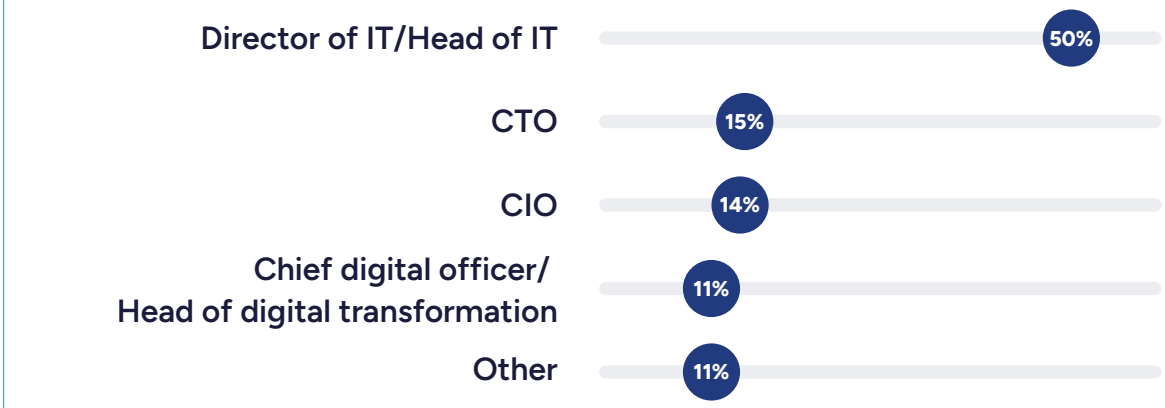
Methodology and participant demographics

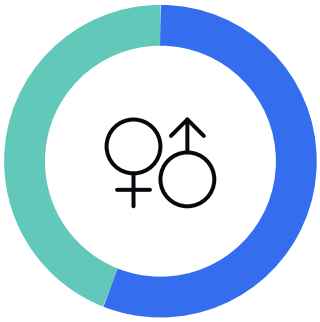
To provide greater context around these findings, here are more details on who we surveyed and the methodology used. Throughout November 2023, we surveyed 200 IT directors and VPs/executives at companies around the world where supply chain management is central to their core business operations The survey was conducted online via Pollfish using organic sampling. Learn more about the Pollfish methodology *here.*

What best describes the type of organization you work for?



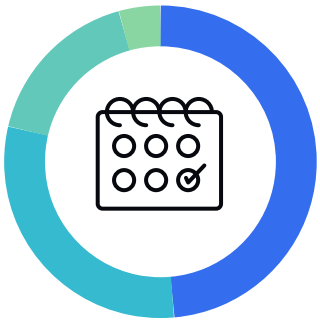
What best describes your title?





Gender

Male	53%
Female	47%

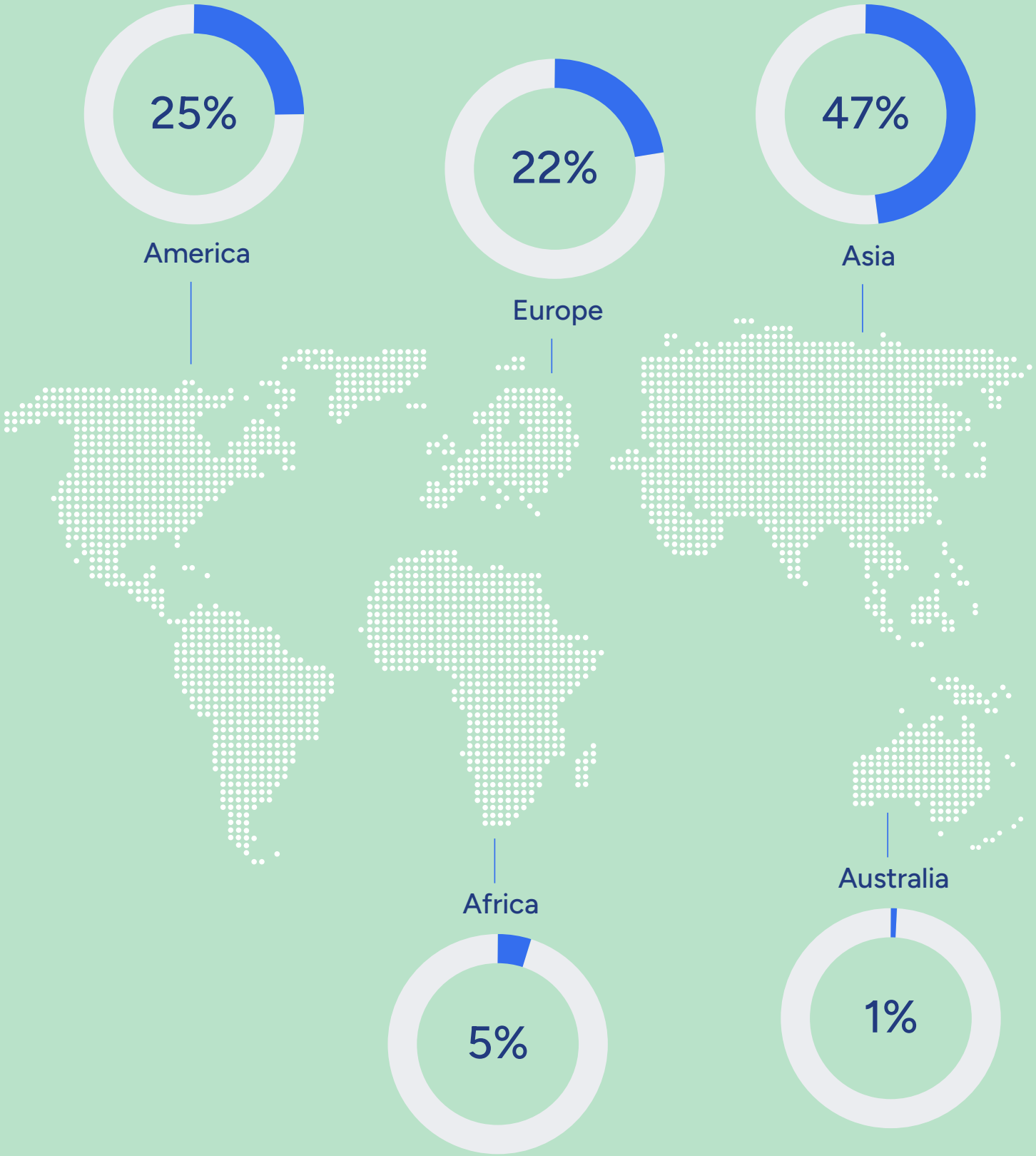


Age ranges

25 - 34	49%	45 - 54	16%
35 - 44	30%	>54	5%

Employment status

Employed for wages	100%


25%
America
22%
Europe
47%
Asia
Africa
5%
Australia
1%

PART #1

Sentiments about blockchain

Blockchain technology has the potential to transform supply chain management, which can only happen when digital leaders know the benefits blockchain can provide. For those managing supply chain processes in their organizations, what are their sentiments around blockchain today, and how convinced are they of blockchain's future impact?

86% believe blockchain offers a competitive advantage for supply chain

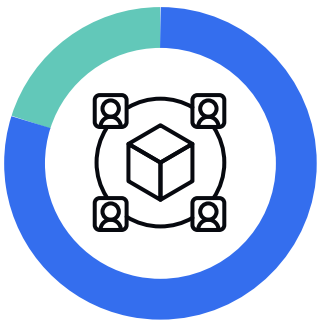
86% believe blockchain technology can offer a competitive advantage to those who adopt it for supply chain management. 14% do not believe it offers a competitive advantage.

Do you believe blockchain technology has the ability to offer a competitive advantage to supply chain that adopt it?

Yes	86%
No	14%

79% are well positioned to use blockchain's competitive advantage

Of those who believe it offers a competitive advantage, 79% say that their organization is well positioned to use blockchain to gain that competitive advantage for supply chain management. 21% do not believe they are well positioned.



[If yes] Do you believe your organization is well positioned to use blockchain to gain a competitive advantage?

Yes	79%
No	21%

Top five benefits of blockchain for supply chain management

Respondents see the following as the top benefits blockchain can bring to supply chain management over the next five to ten years:

- **Security (68%)**

  With its distributed consensus-based architecture, blockchain offers the biggest benefit in creating more secure supply chains and processes.

- **Scalability (56%)**

  With its security, transparency, and technical integration, blockchain technology can scale as supply chains scale.

- **Transparency (52%)**

  Blockchain offers more transparency that can help traceability and provenance in supply chains.

- **Trust (51% tie)**

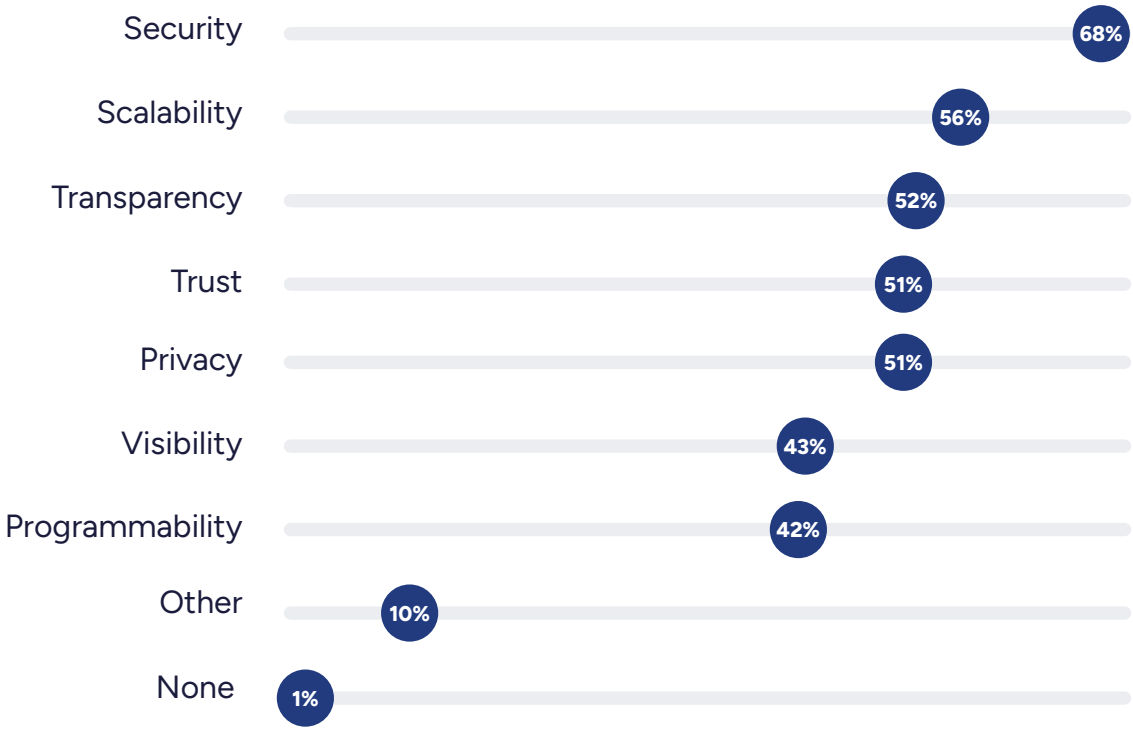
  Blockchain offers increased transparency and the ability to track and trace data through its decentralization, increasing trust in the system.

- **Privacy (51% tie)**

  Blockchain also offers increased privacy through encryption, smart contracts, and its overall decentralized nature.

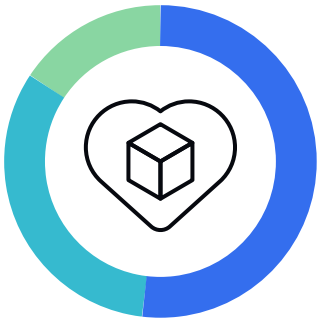
It can also bring visibility (43%), programmability (42%), or other benefits (10%). Finally, 1% don't believe blockchain has any benefits.

Which of the following benefits do you believe blockchain can bring to the supply chain industry over the next 5-10 years?



49% say their executive leadership team are “Blockchain Believers”

How confident is executive leadership in blockchain? 53% of respondents say their leaders are “Blockchain Believers,” while 33% say their leaders are “Blockchain Skeptics.” 15% are not sure how leadership feels about blockchain.



Which of the following best summarizes how your executive leadership team feels about the potential of blockchain?

Blockchain believers	53%
Blockchain skeptics	33%
I am not sure how they feel about blockchain	15%

Summary

For our respondents — IT directors across several industries — sentiments around blockchain technology and how it has the potential to transform supply chains are quite positive and confident. An overwhelming 86% believe that by integrating blockchain technology for supply chain management, they'll gain a competitive advantage in their industry. That comes from benefits like security, scalability, and transparency.

Of those who believe blockchain offers a competitive advantage, 79% say their organization is already well positioned to use blockchain to gain that competitive advantage. However, despite their positive outlook on blockchain, only 49% say their executive leadership team is "Blockchain Believers." While senior-level IT directors may be convinced of the benefits of blockchain, there's still work to be done to convince the rest of the leadership team of those benefits.

PART #2

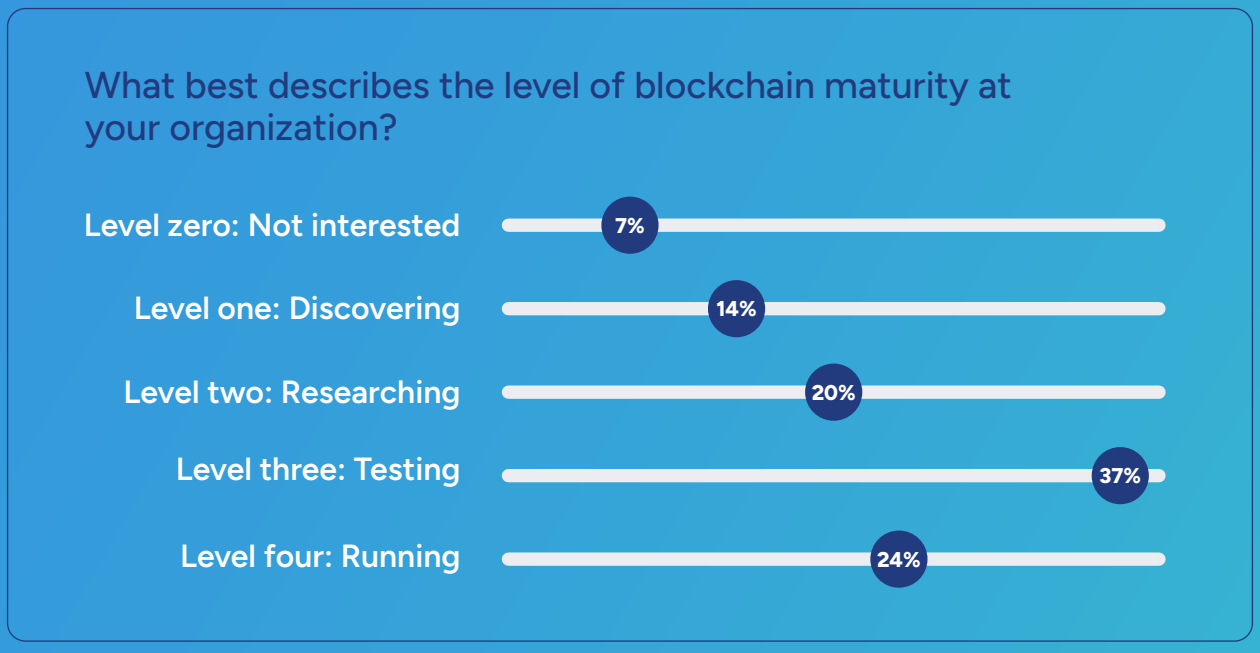
Blockchain initiatives and projects

In the last section, our respondents gave their sentiments about blockchain technology and its potential impact. But have those positive sentiments resulted in action? Here we learn more about what blockchain projects or initiatives their organizations are undertaking and where they're finding success.

81% are either at or beyond the research phase of blockchain maturity

When it comes to implementing blockchain initiatives, where do our respondents' organizations rank on their level of blockchain maturity? 7% say they're not interested; 14% are discovering blockchain; 20% are at the point of researching blockchain; 37% are currently testing blockchain projects; and 24% are currently running blockchain projects.

Overall, 81% are either at or beyond the research phase of blockchain maturity, and 61% are either at or beyond the testing phase.



78% have experimented with blockchain technology

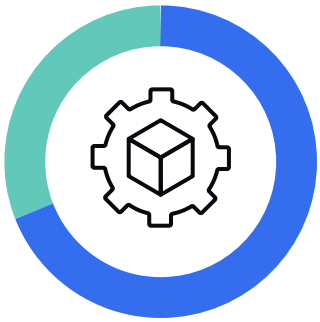
Nearly eight out of ten respondents (78%) say that their organization has already experimented with blockchain technology.

Has your organization experimented with blockchain technology?

Yes	79%
No	21%

71% have had blockchain projects move from R&D into production

For those whose organization has experimented with blockchain technology, 71% have had blockchain projects move from research and development into production.

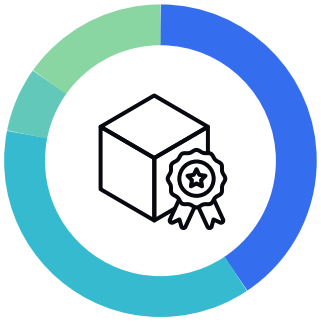


Have any blockchain projects ever moved from R&D into production?

Yes	71%
No	29%

Of those who have experimented with blockchain, 38% were fully successful

For those whose organization has experimented with blockchain technology, 38% say the project was fully successful, with another 38% saying it was somewhat successful. However, 9% say the project was unsuccessful, and another 15% say that it's still too early to tell.



What best describes the outcome of your blockchain initiatives?

Successful	38%	Unsuccessful	9%
Somewhat successful	38%	Still too early to tell	15%

Top five use cases for blockchain

Respondents who are experimenting with blockchain technology are currently exploring the following use cases:

- ESG reporting and monitoring (64%)

  The top use case is tracking and reporting on environmental, social, and governance (ESG) aspects, which can help facilitate transparency and accountability.

- Real-time tracking and IoT integration (50%)

  They also use blockchain to provide updates on product location and condition in real-time, which is especially valuable for perishables.

- Quality assurance and compliance (49%)

  Blockchain can also monitor and verify compliance with industry standards and regulations.

- Data sharing and interoperability (48% tie)

  They also use blockchain to enhance secure data exchange and compatibility across different systems.

- Smart contracts (48% tie)

  Blockchain can be used to automate and streamline processes through code-based contracts, such as payment upon delivery.

They're also exploring use cases in sustainability and ethical practices verification (47%), provenance tracking (43%), counterfeit prevention (41% tie), streamlined payments (41% tie), green financing support (39%), transparency in multi-stakeholder processes (36%), and recall efficiency (30%).

What types of use cases have you explored?

- **64%** **ESG reporting and monitoring:** Tracking and reporting on environmental, social, and governance aspects, facilitating transparency and accountability.
- **50%** **Real-time tracking and IoT integration:** Providing updates on product location and condition in real-time, especially valuable for perishables.
- **49%** **Quality assurance and compliance:** Monitoring and verifying compliance with industry standards and regulations.
- **48%** **Data sharing and interoperability:** Enhancing secure data exchange and compatibility across different systems.
- **48%** **Smart contracts:** Automating and streamlining processes through code-based contracts, such as payment upon delivery.
- **47%** **Sustainability and ethical practices verification:** Validating claims about sustainable and ethical sourcing practices.
- **43%** **Provenance tracking:** Tracing the origin and ensuring the authenticity of products.
- **41%** **Counterfeit prevention:** Verifying authenticity and reducing the spread of counterfeit items.
- **41%** **Streamlined payments:** Facilitating faster, more secure international transactions.
- **39%** **Green financing support:** Leveraging blockchain to support and validate green financing initiatives, such as sustainable projects or eco-friendly investments.
- **36%** **Transparency in multi-stakeholder processes:** Offering a single source of truth in complex, intermediary-rich supply chains.
- **30%** **Recall efficiency:** Quickly and accurately identifying specific batches or lots for product recalls.

85% say ESG factors were a primary driver or significant influence on blockchain experimentation

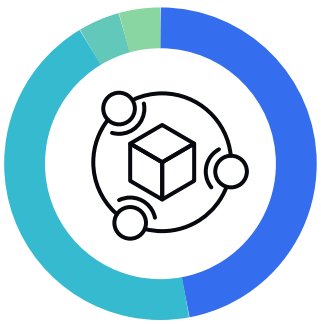
41% say that ESG considerations were the primary driver behind their decision to explore blockchain. 44% say it was a significant influence, and that ESG factors played a major role, but were not the only reason for their decision.

8% say that ESG considerations had some influence, but were not a major factor in their decision. 7% say that ESG factors had little to no impact on their decision to adopt blockchain.

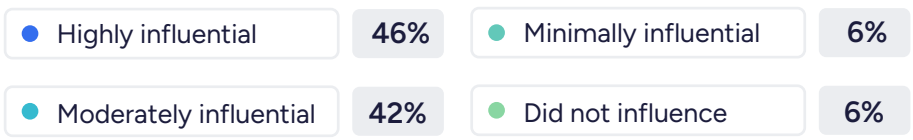
How significant was the consideration of ESG factors in your organization's decision to experiment with blockchain technology?

88% say ESG considerations influenced pursuing blockchain

To what extent did ESG considerations influence their organization's decision to pursue blockchain technology? 46% say it was highly influential, while 42% say it was moderately influential. 6% say it was minimally influential, while 6% say it did not influence their decision.



To what extent did ESG or ESG considerations influence your organization's decision to pursue blockchain technology?



Top five challenges to blockchain initiatives

For those whose organization has experimented with blockchain technology, they encountered the following challenges:

- **Integrating legacy systems with blockchain (21%)**

  The biggest challenge is being able to successfully integrate a blockchain project into their current systems, operations, and networks, leading to useability and scalability.

- **Finding the right tools and platforms (17%)**

  Another challenge is having the right tools and platforms that can help them effectively build and launch blockchain projects.

- **Technical limitations and scalability issues (13%)**

  They're also being held back by not having the technology or expertise to scale the project to where they need it to go.

- **Regulatory and compliance (10% tie)**

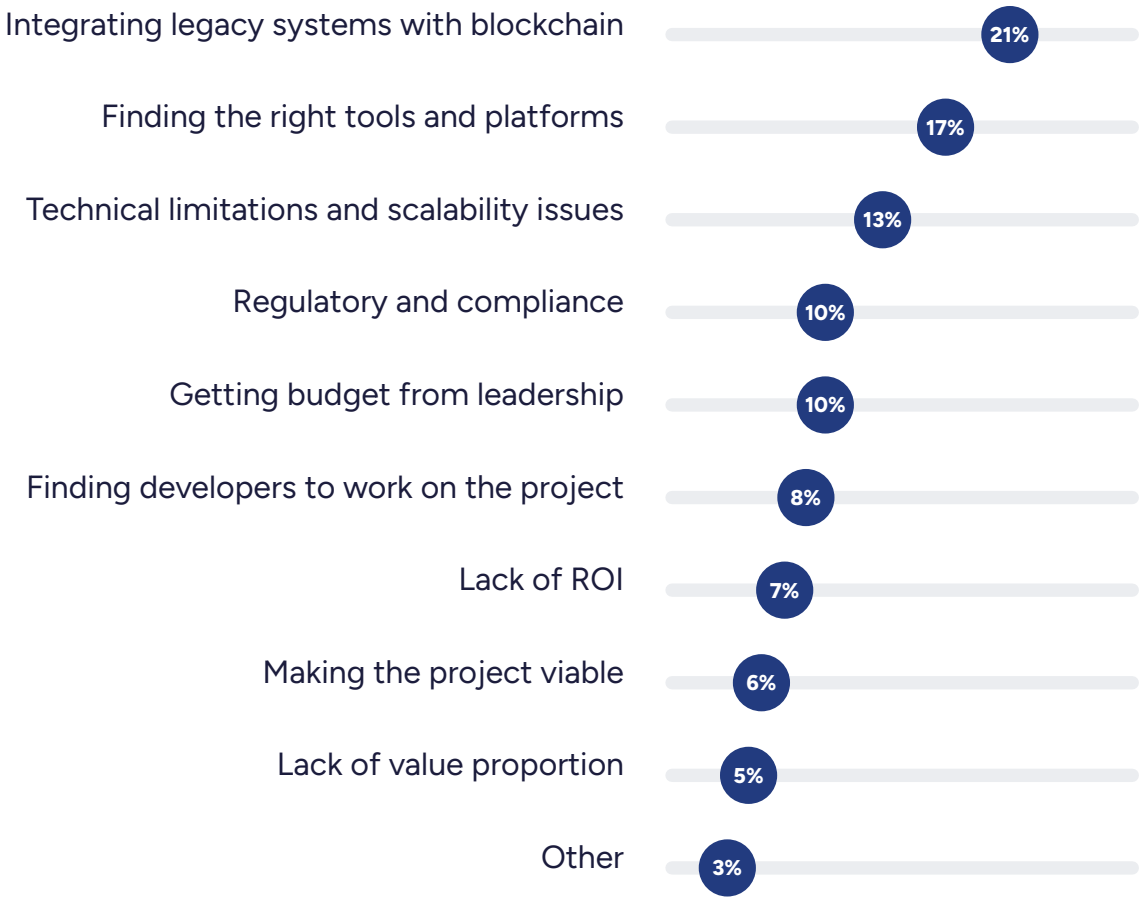
  Another challenge is ensuring their blockchain project meets current industry regulations.

- **Getting budget from leadership (10% tie)**

  Not having the budget for blockchain projects is another challenge holding them back.

Other challenges include finding developers to work on the project (8%), lack of ROI (7%), making the project viable (6%), lack of value proposition (5%), or other challenges (3%).

When it comes to your blockchain initiatives, what has been the #1 challenge your organization experienced?



Top three hurdles to blockchain Experimentation

For those who say their organization has not yet experimented with blockchain technology, these are the reasons for the hesitation:

- **Lack of budget for such projects (21%)**

  Getting internal buy-in and investment in their project is the biggest hurdle to beginning.

- **Lack of development resources (14% tie)**

  They also don't have the technology or the expertise to develop blockchain projects as well.

- **Lack of clear understanding (14% tie)**

  Another hurdle is not understanding what blockchain is, how it'll benefit their organization, or how to implement it.

- **Security concerns (14% tie)**

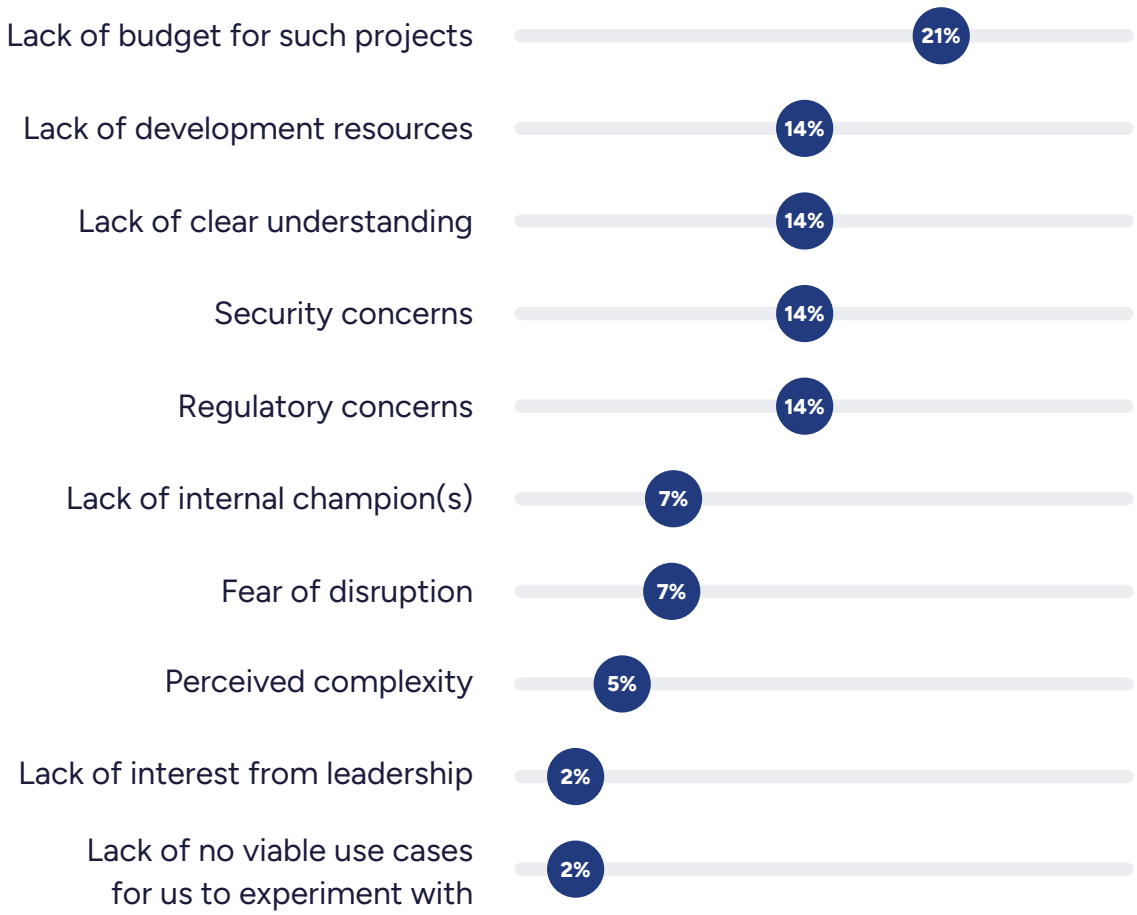
  Concerns around blockchain's security is another hurdle holding them back.

- **Regulatory concerns (14% tie)**

  Like above, they're concerned that their blockchain project won't meet current industry regulations, or that they don't have the knowledge of how to design it so it does.

They also cite lack of internal champion(s) (7% tie), fear of disruption (7% tie), perceived complexity (5%), lack of interest from leadership (2% tie), and lack of viable use cases to experiment with (2% tie).

[If no] what best explains why you haven't experimented with blockchain technology?



Summary

Blockchain adoption for supply chain management is already well underway. 78% have experimented with blockchain technology already, and 81% are either researching, testing, or running blockchain projects. For those whose organization has experimented with blockchain technology, 71% have had blockchain projects move from R&D into production.

The use cases they're exploring include ESG reporting and monitoring, real-time tracking and IoT integration, and quality assurance and compliance. ESG was a main driver in the decision for blockchain experimentation as well. 41% say that ESG considerations were the main reason behind the decision to explore blockchain, and another 44% say that ESG factors played a major role in the decision.

However, despite the high rate of experimentation, only 38% say their initiatives were fully successful, with another 38% saying it was somewhat successful. For them, their biggest implementation challenges are technical: integrating legacy systems with blockchain, finding the right tools and platforms, and technical limitations and scalability issues.

For those who haven't experimented with blockchain, the biggest hurdle keeping them from doing so is a lack of budget and internal investment for blockchain — which could result from a lack of "Blockchain Believers" among leadership.


22.18

PART #3

Blockchain use cases for supply chain

Blockchain technology offers great potential for transforming supply chain management and processes, but how exactly? In this section, respondents rated how they feel about the potential for blockchain to transform specific use cases.

Top six highest potential use cases

Blockchain technology offers great potential for transforming supply chain management and processes, but how exactly? In this section, respondents rated how they feel about the potential for blockchain to transform specific use cases.

- **ESG reporting and monitoring (68%)**
  Blockchain has the highest potential for tracking and reporting on ESG aspects by facilitating transparency and accountability.

- **Data sharing and interoperability (65%)**
  Blockchain also has a high potential for enhancing secure data exchange and compatibility across different systems.

- **Streamlined payments (64%)**
  Blockchain can transform supply chains by facilitating faster, more secure international transactions.

- **Real-time tracking and IoT integration (62%)**
  Blockchain can also provide updates on product location and condition in real-time.

- **Provenance tracking (61%)**
  Blockchain has the potential to be used to trace the origin of a product and ensure its authenticity.

- **Quality assurance and compliance (58%)**
  Blockchain also has a high potential for monitoring and verifying compliance with industry standards and regulations.

Below are a list of potential use cases for blockchain technology In supply chain.

ESG reporting and monitoring: Tracking and reporting on environmental, social, and governance aspects, facilitating transparency and accountability.

Green financing support: Leveraging blockchain to support and validate green financing initiatives, such as sustainable projects or eco-friendly investments.

Provenance tracking: Tracing the origin and ensuring the authenticity of products.

Smart contracts: Automating and streamlining processes through code-based contracts, such as payment upon delivery.

Counterfeit prevention: Verifying authenticity and reducing the spread of counterfeit items.

Streamlined payments: Facilitating faster, more secure international transactions.

Real-time tracking and IoT integration: Providing updates on product location and condition in real-time, especially valuable for perishables.

Transparency in multi-stakeholder processes: Offering a single source of truth in complex, intermediary-rich supply chains.

Recall efficiency: Quickly and accurately identifying specific batches or lots for product recalls.

Sustainability and ethical practices verification: Validating claims about sustainable and ethical sourcing practices.

Data sharing and interoperability: Enhancing secure data exchange and compatibility across different systems.

Quality assurance and compliance: Monitoring and verifying compliance with industry standards and regulations.

Top six lowest potential use case

Respondents believe blockchain has the lowest potential to transform the following use cases:

- **Smart contracts (30%)**
  They believe blockchain has the lowest potential for automating and streamlining processes through code-based contracts, such as payment upon delivery.

- **Transparency in multi-stakeholder processes (29% tie)**
  They believe blockchain also has low potential in offering a single source of truth in complex, intermediary-rich supply chains.

- **Green financing support (29% tie)**
  There's a lack of potential in supporting and validating green financing initiatives, such as sustainable projects or eco-friendly investments.

- **Counterfeit prevention (28%)**
  They also believe blockchain has a low potential to verify authenticity and reduce the spread of counterfeit items.

- **Sustainability and ethical practices verification (27% tie)**
  They believe blockchain has low potential to validate claims about sustainable and ethical sourcing practices.

- **Real-time tracking and IoT integration (27% tie)**
  Blockchain lacks the potential to provide updates on product location and condition in real time.

Summary

As we saw above, respondents are already experimenting with blockchain technology in their supply chain processes.

The use cases blockchain has the highest potential to transform are ESG reporting and monitoring — a major driver for experimentation — as well as data sharing and streamlining payments. They also see its potential for real-time product tracking, provenance tracking, and quality assurance. Overall, blockchain has the highest potential for use cases that involve tracking, reporting, and enhancing security.

However, they see blockchain as lacking the potential to impact areas like smart contracts, transparency in multi-stakeholder processes, and green financing support. They also see less potential for counterfeit prevention, sustainability and ethical practices verification, and real-time tracking — a use case others see high potential for.

Overall, blockchain has the lowest potential for use cases that involve transparency, person-to-person processes, and sustainability.

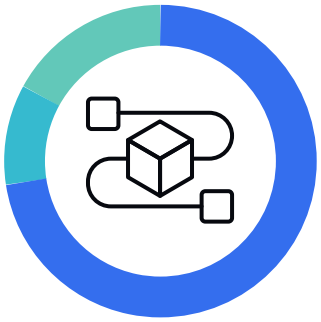
PART #4

Blockchain plans and priorities for the future

According to respondents, there's great potential for blockchain to transform supply chain processes across many use cases. But is the future bright for blockchain projects in their own organizations, and are they best positioned for the future of blockchain growth?

71% expect the volume of blockchain projects to increase

Seven out of ten (71%) say that over the next year, the volume of blockchain projects will increase and that they will do more blockchain projects than ever. However, 13% anticipate that the volume will decrease and that they will do fewer blockchain projects than ever. 17% don't expect to see any change to the volume of blockchain projects they do.



Over the next 12 months, how do you expect the volume of blockchain projects to change?

Increase - we will do more blockchain projects than ever	71%
Decrease - we will do fewer blockchain projects than ever	13%
No change to the volume of blockchain projects we do	17%

Top five factors that will increase blockchain success

For future blockchain projects to succeed, respondents say their organization will need the following:

- **Access to talent with expertise in blockchain (14%)**
  The biggest impact on their success will be having access to blockchain expertise to help build and launch new blockchain projects.

- **Increased budgets (13% tie)**
  Considering it's both a challenge and a hurdle to experimentation above, success will depend on having the budget to invest in blockchain initiatives.

- **Enhanced blockchain education and training (13% tie)**
  Since challenges to adopting blockchain include a lack of understanding and a lack of developer expertise, more education and training would help increase success.

- **Stronger partnerships with blockchain vendors (11%)**
  They also want to create partnerships with blockchain vendors who can help guide them

- **Real-world testing and prototyping (10%)**
  Another factor for future success will be the ability to prototype and test blockchain projects with end users.

Other changes include being able to integrate with existing systems (9%), improved regulatory clarity (8%), a cultural and organizational shift in mindset (6% tie), easy-to-use tooling (6% tie), greater buy-in from stakeholders (5% tie), clearer use case identification (5% tie), or something else (4%).

For your organization to succeed with blockchain, what would need to change?

Access to talent with expertise in blockchain	14%
Increased budgets	13%
Enhanced blockchain education and training	13%
Stronger partnerships with blockchain vendors	11%
Real-world testing and prototyping	10%
Integration with existing systems	9%
Improved regulatory clarity	8%
Cultural and organizational shift in mindset	6%
Better to use tooling	6%
Greater buy-in from stakeholders	5%
Clearer use case identification	5%
Other	4%

Summary

As we've seen throughout, respondents are generally positive about blockchain, see its potential to transform supply chain processes, and are already experimenting with blockchain across many use cases.

It looks like that trend will only continue, as 71% expect the volume of blockchain projects to increase at their organization over the next year. For this segment, 87% have already experimented with blockchain, 76% have moved blockchain projects from R&D into production, 59% of leadership are "Blockchain Believers," and 96% believe blockchain offers a competitive advantage. In other words, their organization is creating a blockchain flywheel that will continue moving forward.

What factors will help better position them for more success with their blockchain initiatives? First, they want access to talent with expertise in blockchain, which will make building and launching blockchain projects much easier and faster. Next, they want increased budgets, which was the biggest hurdle to starting experimentation — and which requires increased leadership buy-in to allocate those budgets. Finally, they want enhanced blockchain education and training so that everyone knows how blockchain can positively impact the organization and create that competitive advantage.

PART #5

Actionable takeaways for IT and digital leaders

Today's IT and digital leaders are turning to blockchain technology as a major solution for the future. They're already experimenting with blockchain on ESG reporting and monitoring, real-time tracking, and quality assurance and compliance, and see it as a technology that can increase security, scalability, and transparency.

But there are still challenges to overcome to realize the full potential blockchain can offer for supply chain management. For IT and digital leaders who want to embrace blockchain and scale their efforts successfully, here are six actionable takeaways from our survey findings above.

1 Understand the competitive advantage of blockchain

Respondents who believe that blockchain can offer their organization a competitive advantage saw greater success overall: they were more likely to experiment with blockchain, saw more projects move to production, had more "Blockchain Believers" in leadership, and will continue to invest in blockchain projects going forward.

Believing that blockchain can offer a competitive advantage starts by learning more about blockchain's benefits, knowing how it can transform use cases applicable to your business, and being open to embracing this new technology.

2 Find your use cases

There are many different use cases where you can adopt blockchain, but not all use cases will apply to your organization or support your supply chain management goals. The top use cases respondents are already working with are ESG reporting and monitoring, real-time product tracking, and quality assurance and compliance. There are many others that blockchain has high potential to transform — and while some see low potential for certain use cases, others see high potential for the same use cases.

Identify the use cases where blockchain will provide the biggest benefit for your organization and move you closer toward your goals for improved supply chain management. It may be for tracking and reporting, for enhancing security, or for facilitating more direct transactions.

3 Increase buy-in for an increased budget

One issue that surfaced throughout responses is the lack of budget for blockchain projects. It's the biggest hurdle to starting with blockchain experimentation, it's one of the top challenges for those who have experimented, and it's one of the factors that will increase success into the future.

IT and digital leaders can increase their budgets by communicating the value of blockchain to leadership and other stakeholders. Talk about blockchain's benefits in terms of ROI, like time saved through more streamlined processes or increased incremental revenue through improved customer experiences. Seeing the value they'll get from these new blockchain projects will help convince leadership to invest.

4 Let ESG drive your blockchain adoption

As we saw above, Environmental, Social, and Governance (ESG) factors are a big driver in companies looking to blockchain solutions for supply chain management. 85% say ESG factors were a primary driver or significant influence on blockchain experimentation. Additionally, ESG reporting and monitoring is the use case most used by those experimenting with blockchain and is the top use case with the highest potential for blockchain to transform.

As ESG requirements only increase, IT and digital leaders can look to blockchain solutions to track and report on ESG activities and compliance by enabling more transparency and accountability across the supply chain.

5 Invest in education, expertise, and technical know-how

For respondents, the biggest challenge to blockchain experimentation and adoption is technical — having the right platforms, knowing how to integrate blockchain into current systems, and having the right development resources. The next step is to increase that technical knowledge internally through education and training that expands blockchain proficiency across the organization.

Adopting the right Blockchain Transformation Platforms will make it easier for developers to build high-quality blockchain projects with faster time to value. The right platforms can also smooth out integration complexity as well so that projects can work seamlessly with current systems.

6 Experiment and iterate

Finally, don't be afraid to experiment with blockchain on small-scale projects. One of the top factors respondents believed could help with their future blockchain success is to engage in real-world testing and prototyping.

One way to do this is by taking a design thinking approach to building blockchain projects. Engage with end users to understand their pain points, quickly create prototypes of blockchain solutions to test with those end users, and then iterate on their feedback to make sure you're creating great projects that solve supply chain problems.

Blockchain technology has the potential to transform and improve supply chain management across a number of industries — but only if barriers like a lack of technical expertise, budget, and understanding of how to apply it to relevant use cases can be hurdled.

However, organizations who commit to growing their blockchain experimentation and commitment will create more streamlined operations, more efficient internal processes, new ways of bringing value to end users, increased opportunities for revenue, and more. Building a future for your organization at the forefront of your industry starts by leveraging blockchain technology today.

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Get started on your Blockchain Transformation journey today by visiting

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