

CONESTOGA

Connect Life and Learning

Usage of Blockchain in Canadian Supply Chains

Report of research findings,
February 2023

Dr. Kevin McDermott
Stephen Thomson

Summary of Findings

Readiness of Canadian Supply Chain Organizations to Adopt Blockchain Technologies

The robustness of **supply chain integrity** can be improved through improved organizational collaboration and communication.

As organizations look to shore up their supply chains, by improving efficiencies and effectiveness, **blockchain technologies** may be a catalyst for change over the coming years.

This document outlines findings from a survey of Canadian supply chain organizations related to their **readiness to adopt blockchain technologies in the fall of 2022 and 2021**. These data, collected year-over-year, begin to provide insight into trends that may be of value to business decision makers.

1. Familiarity with Blockchain



2. Current Use of Blockchain



3. Likelihood to Adopt Blockchain



4. Future Use of Blockchain



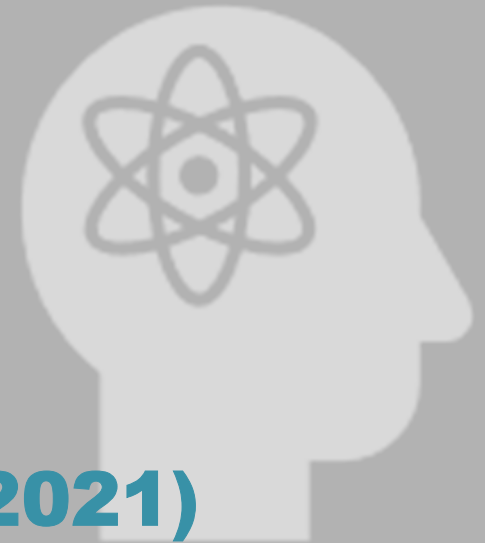
5. Motivations for Adopting Blockchain



1.

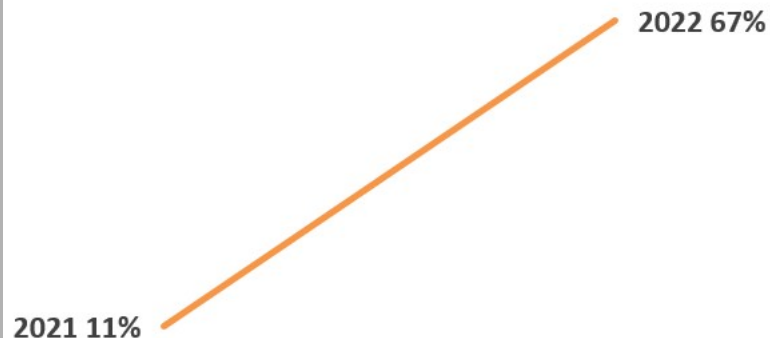
Familiarity with Blockchain

67% (Up from 11% in 2021)



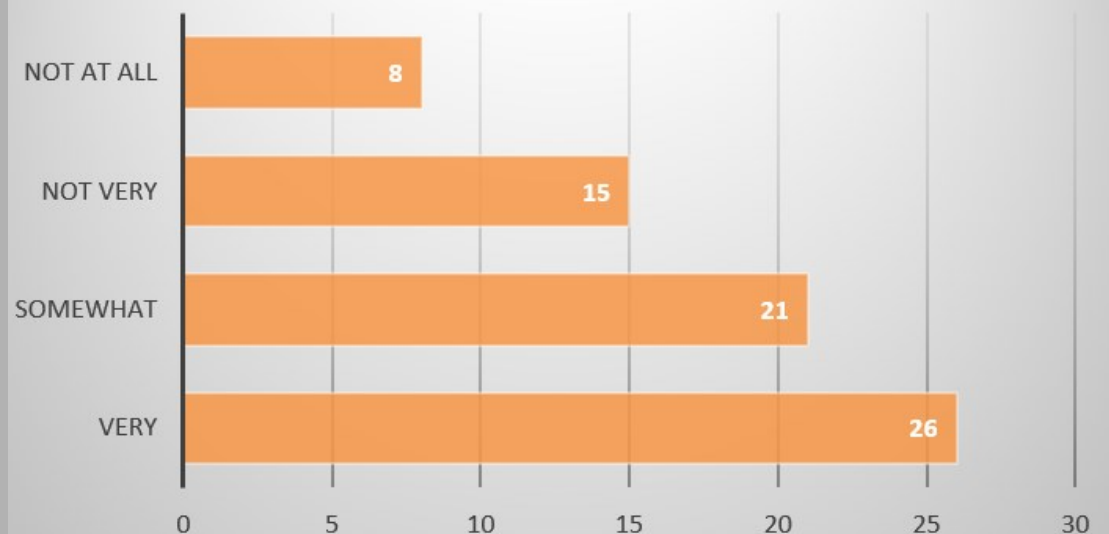
of survey respondents are somewhat or very familiar with blockchain technology

2021 - 2022 Change



n = 70 respondents answered

How Familiar are you with Blockchain



1.

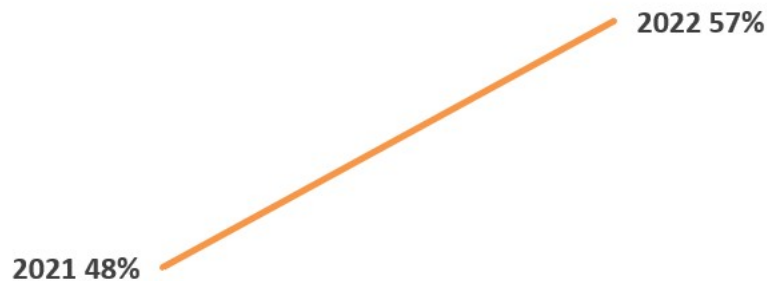
Familiarity with Blockchain

57% (Up from 48% in 2021)

of survey respondents are at least somewhat familiar with how blockchain technology may be used within their organizations.

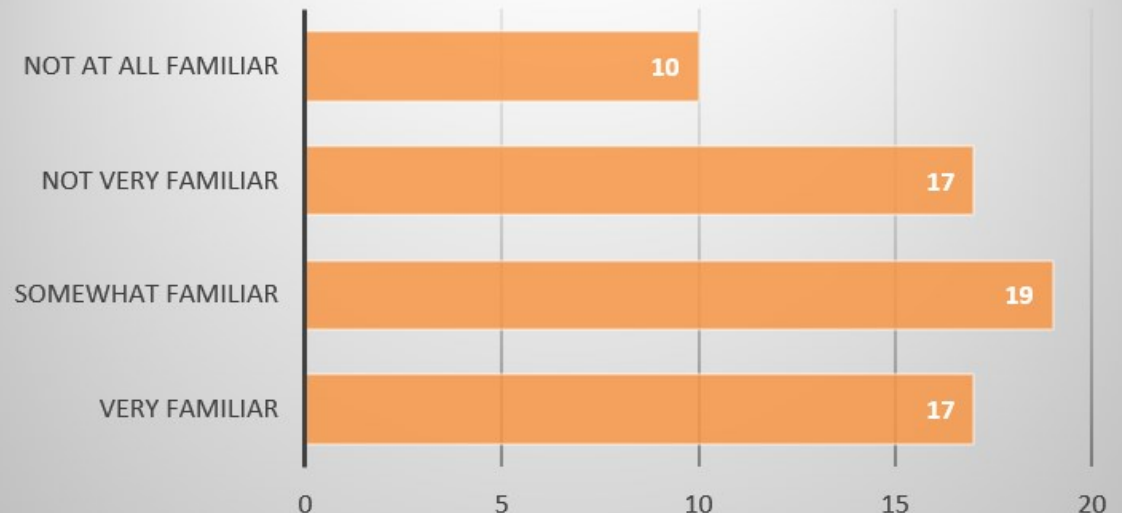


2021 - 2022 Change



n = 63 respondents answered

Are you familiar with how blockchain technologies might be used within your organization?



2.

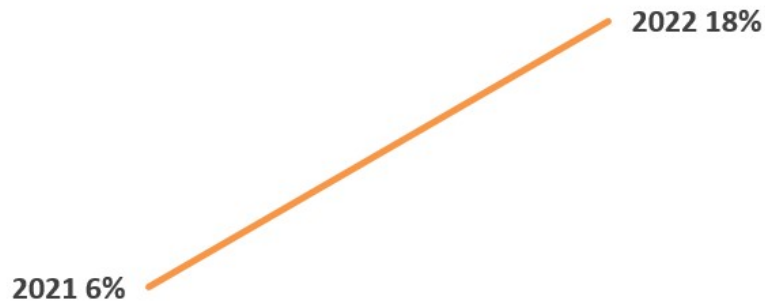
Current Use of Blockchain



18% (Up from 6% in 2021)

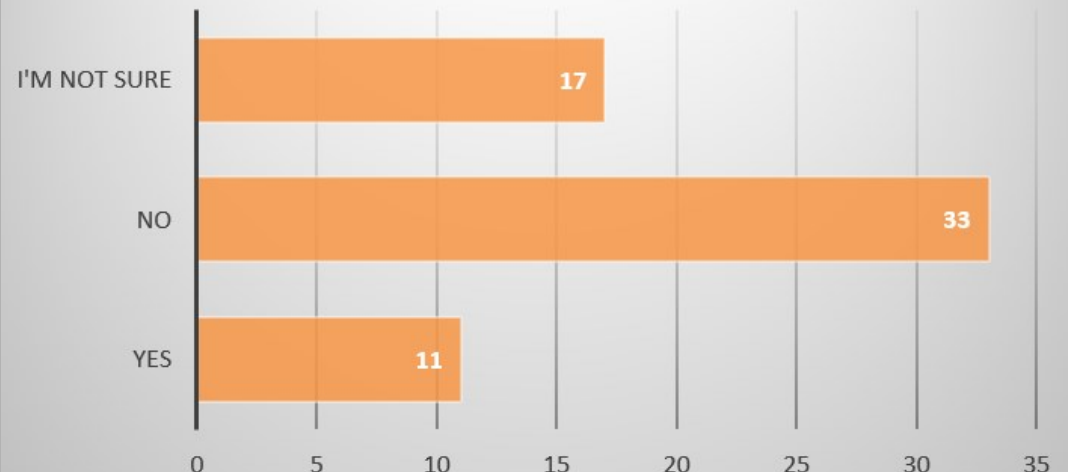
of survey respondents report that their organizations have used blockchain, or they do not know if they have.

2021 - 2022 Change



n = 61 respondents answered

As of today, has your organization ever used blockchain technology?



3.

Likelihood to Adopt Blockchain

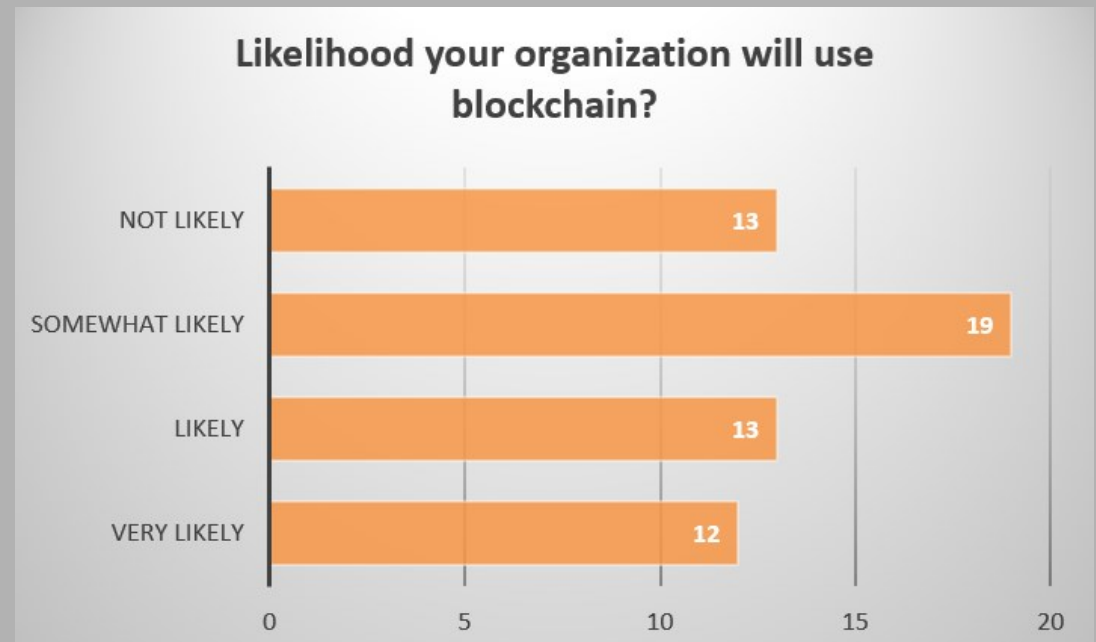


56% (Down from 75% in 2021)

of survey respondents report that their organizations are at least somewhat likely to use blockchain technologies in the future.



n = 57 respondents answered



4.

Future Use of Blockchain 2021

In what way is your organization considering using blockchain technologies?



Supply Chain Collaboration

- "use blockchain technology on document flow with other stakeholders including government bodies"
- "Linking key shipping documents and customs submissions/clearances"
- "for our transportation billing and is shared with all our carrier partners"
- "b2b contact with customers and external stakeholders"
- "Collect data from Carriers ie: in/out times, ETA's"
- "Merging all technologies into one so they communicate to each other"
- "through the transfer of material information between business partners"

Reverse Logistics and Warranty

- "returnable rummage, product warranty"
- "Streamline & expedite accurate receipt, putaway, delivery & returns data"

Authenticity and Fraud Prevention

- "help curbing the use of spurious and duplicate spares from the aftermarket"
- "improving the consumption of genuine spares for out of warranty machines"
- "Secured payment, anti fraud, quick response of verified payments"

Tracking and Monitoring

- "Supply Chains being monitored from all the plants in the different countries"
- "audit real time movement within in the supply chain"
- "record accurate real time cost data on deliveries during the supply chain process"
- "improve shipment tracing - ship manifests verifying cargo"
- "In the supply chain side of things, smart contracts can be created"
- "Asset tracking"

5.

Future Use of Blockchain 2022

In what way is your organization considering using blockchain technologies?

Tracking & Monitoring

- "in material traceability and visibility"
- "traceability, identity, financial transactions"
- "Immutable verifiable one source of truth frameworks for agreement on data"
- "Tracking of an item from purchase of raw materials to manufacture and delivery of the products. Good for audits"
- "smart factory logistics, VMI, Smart bin"
- "To track student payments"

Bill of Lading and Accounts Billing

- "We could standardize certain documents needed from/shared with customers, such as eBOLs."
- "We use blockchain for transportation billing"
- "The housing of bills of lading in ledger format as opposed to original printed copies and customs related transactions used to facilitate clearances"
- "Tracking products and shipping documents (OBL)"
- "for track and trace deliveries, freight payments, accounts payable and receivable"
- "Help with real time tracking and billing of carrier waybills"

Validation and Authentication

- "digital documents could be used through blockchain in order to create an unalterable digital document; serving as proof, as well as making easier for the parties involved to check documents"
- "Validate engineered drawings and authenticate any changes"
- "Supply chain proof of ownership."
- "To authenticate product sourcing"
- "Validating product safety for transportation"

Supply Chain Collaboration

- "End to End Supply chain automation"
- "data sharing"
- "Procurement"
- "Linking of processes"
- "Special on trade for supply chain"
- "transmission of shipping and customs paperwork/declarations"
- "To establish seamless payment processes with carriers"
- "supply chain management and tokenization of assets"



6.

Use of Blockchain in 2022

In what way has your organization utilized blockchain technology??

Decentralized Finance

- *"We are developing Smart Contracts for financial applications."*
- *"P2P communication & Defi"*
- *"DiFi apps"*

Tracking & Monitoring

- *"Innovative technology, as Drive for transparency and digital records and certification digital"*
- *"Cross border trade, Multi cloud deployment, Analytics,"*
- *"Development and Transactions"*

Supply Chain Collaboration

- *"We use blockchain for transportation billing"*
- *"Supplies management"*
- *"Transportation Billing"*
- *"supply chain management and for NFTs"*



7.

Motivations for Using Blockchain 2021



*“Automating transport billing,
it's transparent, unchangeable,
and can be automated to use
less manual labor and improves
accuracy.”*

*“Better more fluid
communication”*

*“To streamline our investment
process and offerings”*

“Staying current with industry”

*“more trust with agents outside of the
company and reliable in case of data
manipulation”*

8.

Motivations for Using Blockchain 2022



“To optimise the supply chain management & implement smart contracts in cross boarder trades.”

“Blockchain solutions brings trust and transparency to business”

“Organization always tries new things and wants to be a pioneer and utilize the newest technology”

“met the needs of our industry partners looking to secure transactions, data, etc.”

9.

Processes Blockchain Could Replace in 2022



“Payment Systems, Transaction Processing Systems, Land Management”

“Entire ERP System”

“Sending physical documents to release shipments at customer port”

“Manual validation of certificates”

“Documentation that's not standardized. EDI/API connectivity to different providers.”

10.

Motivations for Not Using Blockchain in 2021



“We have not had the request from key customers advising that it is an essential element for business continuity”

“to ensure that the desired results are achieved the adaptation has to be done by complete value chain”

“its implementation and adoption costs are a deterrent.”

“barriers in understanding / knowledge”

11.

Motivations for Not Using Blockchain in 2022



Insufficient Benefit

- "... the company is not really invested or investing a lot of money in something like this, even if it proves to be something innovative and useful"
- "... we [already] provide an acceptable degree of transparency and immutability. Using blockchain only for us (instead of in conjunction with our partners) will probably not be as effective as what we are doing as of now."
- "... no one has proposed the benefits to the organization."

Lack of Organizational Knowledge

- "I don't believe anyone in our business knows enough about blockchain to formulate a business plan on integrating it."
- "We aren't large enough, have the financial or tech savviness to implement"
- "Lack of Awareness and Similarity with its uses, except capacity."
- "I was unaware of its application"
- "No expertise and use case reviewed"
- "not be aware or not willing to try by the management level"
- "Lack of information and knowledge. Most people don't even know what blockchain is."

Lack of Standards & Mass Adoption

- "The company is not on the bleeding edge of tech. High regulated industry with validated systems."
- "[Blockchain is] not yet proven"
- "Needs to be a critical mass of adopters before the investment would be worth it. and being an early adopter without a critical mass doesn't seem to be beneficial"
- "I think it is too new, not regulated and I don't see the benefit. Most business account payable and receivable work electronically already, Shoring up online data storage and transfers and emails for security purposes should be the focus."
- "No industry standard"
- "System is not mature enough, need mass adoption of smart contracts before adoption would take place"
- "My org isn't an early adopter. As of yet they do not see the use of a blockchain ledger"
- "... I feel blockchain is not as efficient as it is propertied to be and is not yet widely adapted outside small business' and some online vendors for consumers."
- "Because we are not living in the mass adoption era yet. Most of projects and networks are still building."



CONESTOGA

Connect Life and Learning

Researcher Contacts:

- **Dr. Kevin McDermott,**
Professor of Business Analytics, School of Business, Conestoga College
Email: kmcdermott@conestogac.on.ca
- **Stephen Thomson,**
Director, Centre for Supply Chain Excellence, Conestoga College
Email: sthomson@conestogac.on.ca

Special thanks to our industry association partners:

- **Canadian Institute of Traffic and Transportation (CITT)**
- **Canadian Blockchain Supply Chain Association (CBSCA)**