General observations and takeaways

Relatively low level of awareness	Tracking/ tracing/ traceability & communications important applications	Relatively high number plan to implement over the next year	Lack of standards/ awareness key obstacles	Big data/ analytics/IoT key influences - RFID only 50% impact

The modern supply chain is a complex network of company interactions and product movements that can span multiple countries. These activities must be choreographed so that customer demands and the strategic and tactical goals of each commercial player involved are met.

Blockchain is a class of software technology that is composed of other technologies including data storage, distribution and synchronization, cryptography and identity. As a technology that enables large, complex communities of trading partners to transact business securely in real time, blockchain could have a key role to play in the management of global supply chains.

But to what extent is the supply chain community aware of blockchain applications, and how far along the development curve is the industry? During April 2017, Chain Business Insights conducted a survey to find out. This is the first in an ongoing series of industry surveys on blockchain's development and usage in the supply chain domain.

We asked participants how they might use blockchain, the primary advantages of the technology, when they might implement it, and the obstacles to adopting it. Given the move toward the digital supply chain, we also asked which other technologies will likely have an impact on the industry.

Readers should note that this was a focused survey of supply chain professionals (42 respondents) from companies of all sizes. Forty-five percent were from companies with less than $10 million in revenue, and 33% were from companies with more than $500 million in revenue, with the remaining 22% in the middle tiers. Among our respondents were supply chain practitioners, shipping agents, technology providers, consultants and others. About two-thirds (67.5%) of respondents reported that their supply chain is cross-border/global. Although the sample size was small, Chain Business Insights believes the

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results are insightful because of the level of familiarity that most respondents have with blockchain technology.

Survey Highlights

Level of Awareness

Survey participants were asked to rate their level of awareness of blockchain on a 1 to 5 scale, with 1 representing no awareness and 5 representing already implementing the technology. The results shown in Chart #1 below indicate that the level of awareness is relatively high among this group, and more than one-third of respondents are already implementing the technology.

Nearly one-quarter rated their awareness either a 3 or 4, indicating they have some familiarity. However, 16.7% rated their awareness as either 1 or 2, indicating that are at the beginning of the learning curve.

We suspect that this lower level of awareness is more representative of the supply chain industry as a whole. Most of the blockchain development activity to date has been in financial services, but other industries – and notably supply chain management – are now actively evaluating the technology.

Chart #1: What is your level of awareness of blockchain?

(Please rate on a scale of 1-5 with 1 representing no awareness and 5 representing already implementing the technology)
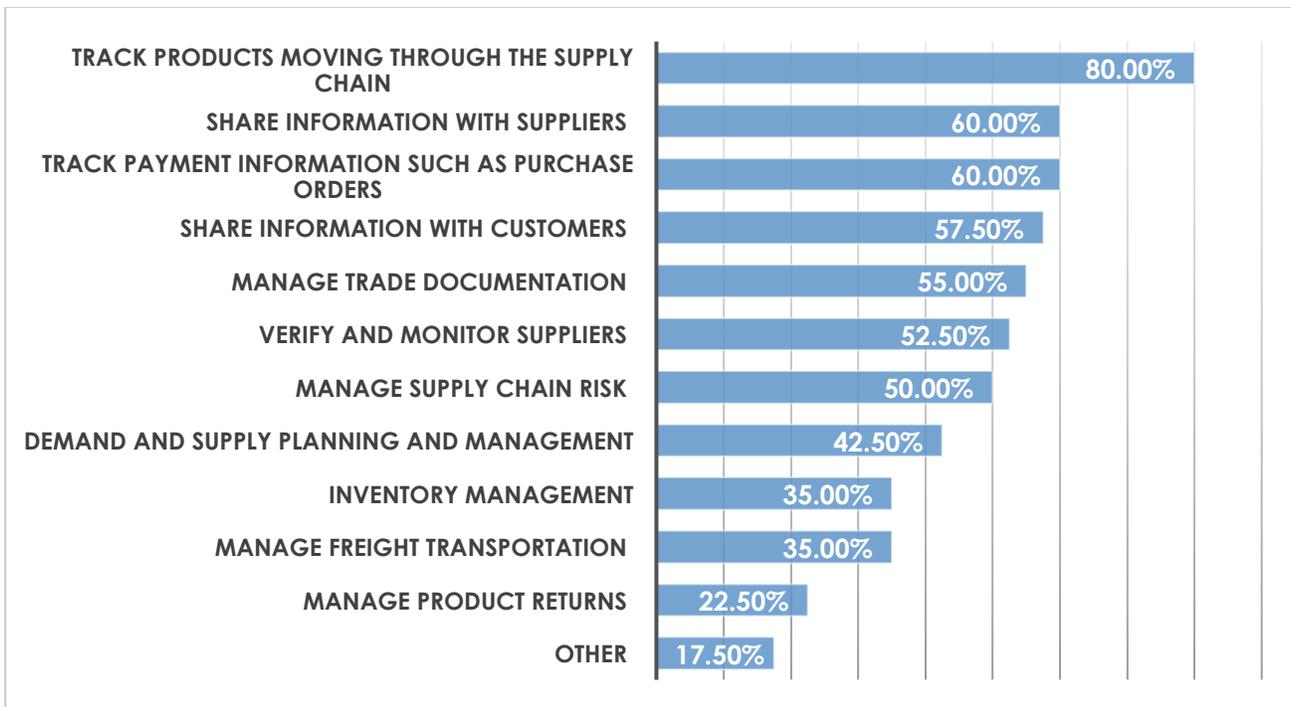N=42

4
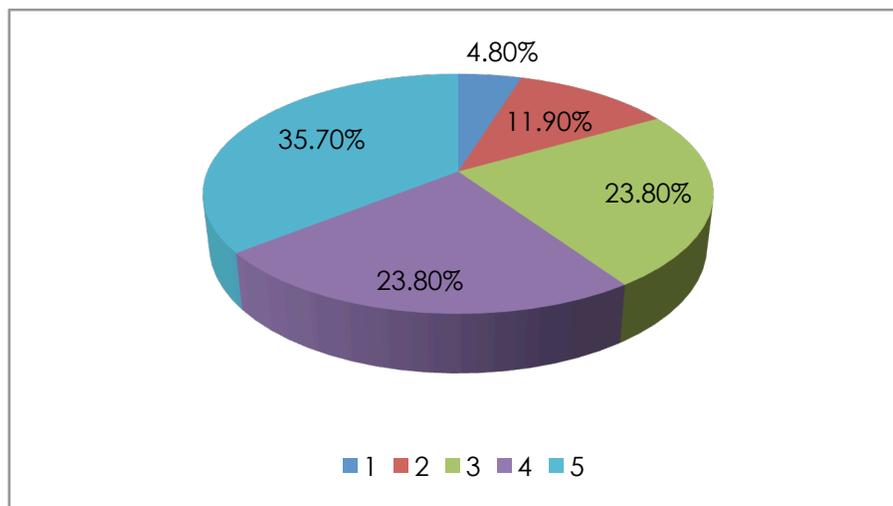
Use Cases

To get a feeling of the use cases supply chain professionals are thinking about, survey participants were asked for which activities they are most likely to use blockchain (multiple responses were allowed.) The results are shown in Chart #2 below. The activity respondents cited most often was "track products moving through the supply chain," followed by "share information with suppliers" and "track payment information such as purchase orders." They were least likely to mention "manage product returns" and "other."

This finding reflects one of the primary areas of potential for blockchain applications: improving supply chain transparency and traceability. Blockchain's ability to maintain a tamper-proof, timely record of product movements and related transactions is of huge interest to supply chain practitioners. And it comes at a time when the industry is under intense pressure to deliver improvements in these areas.

Chart #2: Which activities are you most likely to use blockchain?
Multiple responses were permitted.
N=40

Activity	Percentage
TRACK PRODUCTS MOVING THROUGH THE SUPPLY CHAIN	80.00%
SHARE INFORMATION WITH SUPPLIERS	60.00%
TRACK PAYMENT INFORMATION SUCH AS PURCHASE ORDERS	60.00%
SHARE INFORMATION WITH CUSTOMERS	57.50%
MANAGE TRADE DOCUMENTATION	55.00%
VERIFY AND MONITOR SUPPLIERS	52.50%
MANAGE SUPPLY CHAIN RISK	50.00%
DEMAND AND SUPPLY PLANNING AND MANAGEMENT	42.50%
INVENTORY MANAGEMENT	35.00%
MANAGE FREIGHT TRANSPORTATION	35.00%
MANAGE PRODUCT RETURNS	22.50%
OTHER	17.50%

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Blockchain Benefits

In addition to the capabilities mentioned above, blockchain can enhance trust between supply chain partners, improve data security, reduce transaction costs and increase supply chain velocity. Other benefits could emerge as the technology evolves.

Chain Business Insights asked survey participants to rank these advantages in order of importance on a scale of 1 to 6, with 1 being the most important and 6 being the least important.

Improving supply chain visibility was highlighted by respondents. Knowing the whereabouts and status of every product moving through global distribution networks in real-time or near real-time is critical to competitiveness. To this end, it is not surprising that 45.95% of respondents cited "improves supply chain visibility/transparency" as the most important advantage, as shown in Chart #3 below.

The next most important advantage cited was "reduces transaction costs" (24.32%). Again, no surprise given the scope for replacing cumbersome legacy systems, facilitating third-party inspection and certification systems, eliminating fraud, and lowering the cost of capital.

This was followed by "enhances trust between supply chain partners" (13.51%). The sheer number of diverse players that make up a supply chain and the global nature of these entities make trust a precious commodity.

It is interesting to note that one-third of respondents cited "enhances trust between supply chain partners" as the second-most important advantage of blockchain, followed by "increases supply chain velocity" (24.24%) and "reduces transaction costs" (18.18%).

Readers should note that there are five advantages shown in Chart #3. The sixth was "other", but no one ranked it as the top or second-most important advantage.

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## Chart #3: Primary advantages of blockchain
Top: N=37; Second: N=33
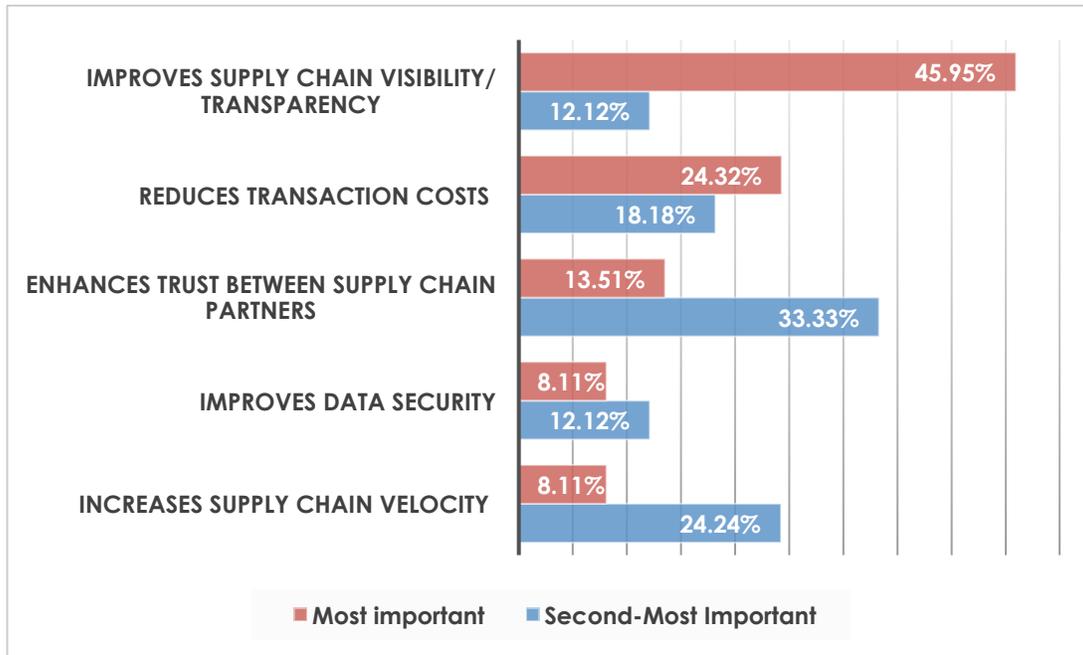
Implementation Plans

The acid test of any innovative technology is the number of players that are actively engaged in implementing it. This is especially important in the supply chain community, which in the past, has experienced its fair share of false starts and new ideas that did not reach their promised potential.

Yet, 42.5% of respondents reported that they plan to implement blockchain within the next year, and 20% intend to implement the technology within two years, as illustrated in Chart #4. This result is compatible with the relative high awareness of our survey sample. Still, 30% of respondents have no idea when blockchain might be implemented, reflecting the uncertainty that still surrounds the technology.

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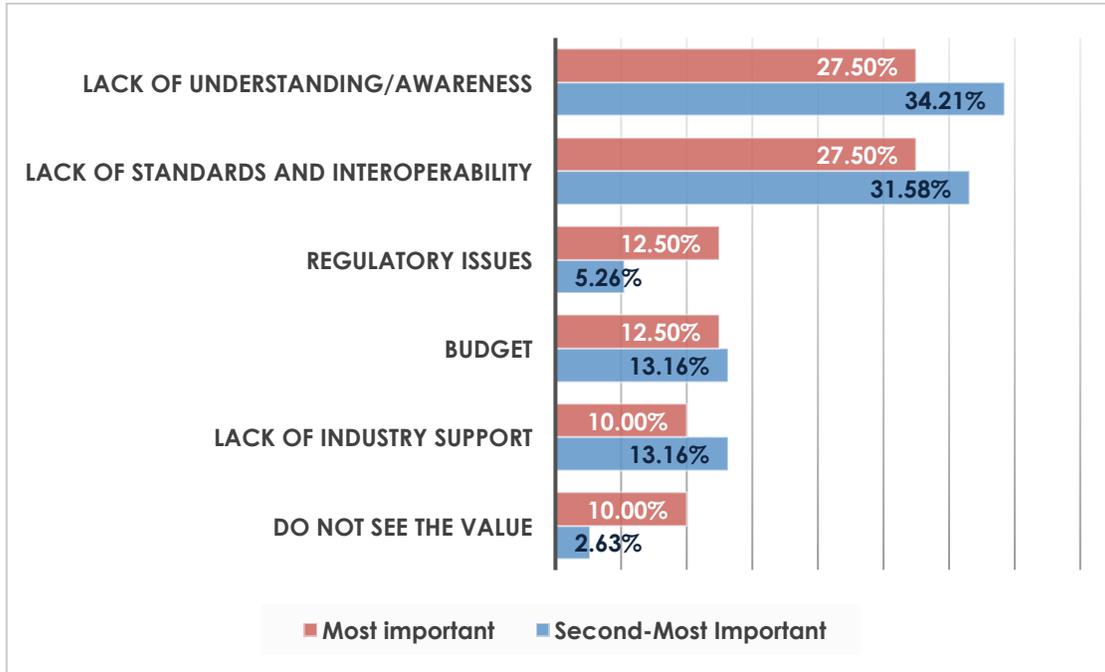### Chart #4: When does your company plan to implement blockchain?
N=40
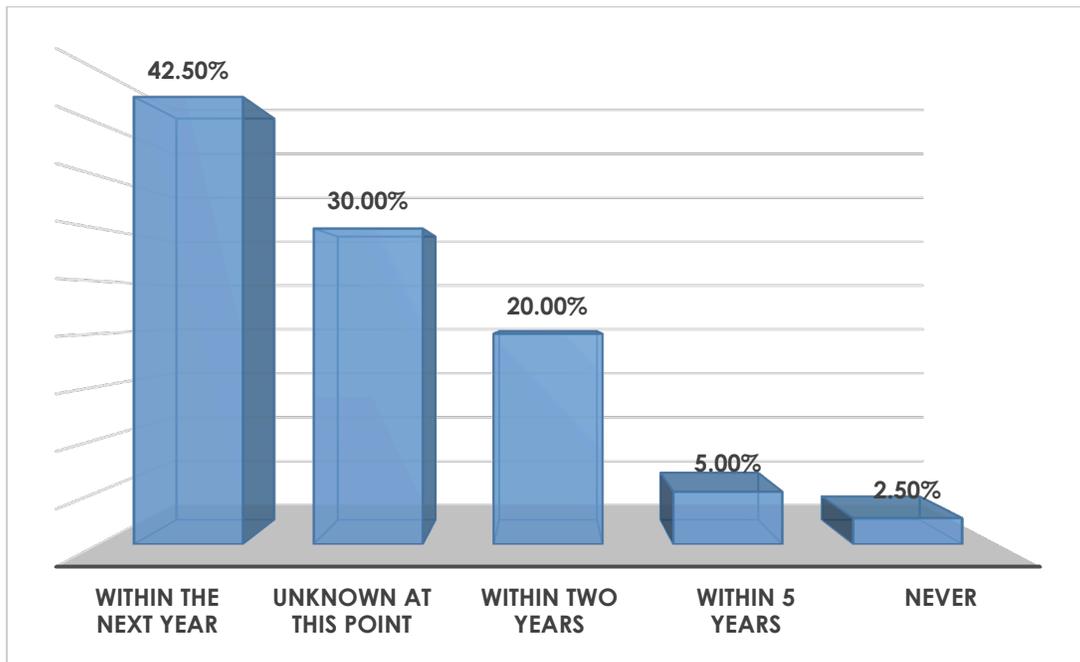
Adoption Hurdles

In technology, change is never easy or without risk, and there are often major obstacles standing in the way of progress. Survey participants were asked to rank the importance of the several obstacles to adopting blockchain technology. Among them were budget, lack of standards and interoperability, lack of understanding/awareness, do not see the value, lack of industry support, and regulatory issues. The results are shown in Chart #5.

Chain Business Insights was not surprised to find that 27.5% of respondents cited "lack of understanding/awareness" as the most important obstacle to adopting blockchain, and the same percentage noted "lack of standards and interoperability". Both of these factors were cited as the second most important obstacles as well.

Chart #5: Obstacles to adopting blockchain

Most important: N=40; Second-most important: N=38

LACK OF UNDERSTANDING/AWARENESS — 27.50% / 34.21%
LACK OF STANDARDS AND INTEROPERABILITY — 27.50% / 31.58%
REGULATORY ISSUES — 12.50% / 5.26%
BUDGET — 12.50% / 13.16%
LACK OF INDUSTRY SUPPORT — 10.00% / 13.16%
DO NOT SEE THE VALUE — 10.00% / 2.63%

■ Most important ■ Second-Most Important

Blockchain Connectivity and Complementary Technologies

Many technological developments such as the growth of 3D printing and Internet of Things (IoT) sensor networks are reshaping the way global supply chains are designed, built, and managed. Thus, blockchain's ability to link into IoT networks and other innovations is of vital importance. To this end, Chain Business Insights asked survey participants which other technologies will likely have an impact on supply chain management. As we expected, big data/analytics, IoT, cloud computing, and RFID came out on top.

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Chart #6: Which of these other technologies will have an impact on supply chain management?

N=40
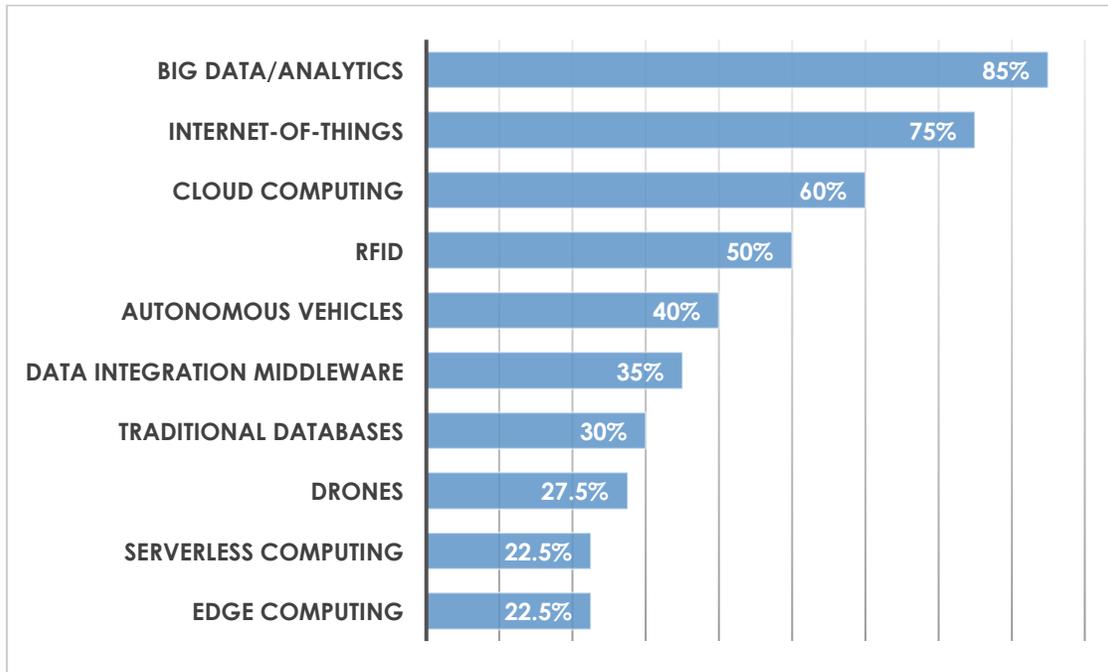
Conclusion

Many believe that the next wave of blockchain innovation will occur in supply chain management, a function that has gained in strategic importance and which lends itself to the unique benefits of the technology.

The first development projects in the supply chain domain are emerging – but as our survey underlines, there is still a long way to go before the technology gains widespread acceptance. Still, key capabilities such as product tracking and tracing and verifying product chain of custody will likely drive higher levels of awareness in the near to medium term.

Chain Business Insights is committed to following the progress of blockchain and keeping members abreast of the latest trends. For more information about Chain Business Insights, please visit our web site at www.chainbusinessinsights.com.

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About Chain Business Insights

Chain Business Insights, LLC is the first company to provide research, analysis and business intelligence on blockchain technology specifically geared toward supply chain management and trade finance professionals. Target members include supply chain managers at manufacturers, wholesalers and retailers; import/export agents; trade finance executives at banks and other financial services players; technology professionals; lawyers; regulators; management consultants; universities and others. By becoming a member, they can keep abreast of the latest developments and learn how blockchain can help promote efficiency, save costs and improve regulatory compliance. For more information about Chain Business Insights, please visit our web site at www.chainbusinessinsights.com.

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