2019

TOP 5 TRENDS

IN ENTERPRISE LABELING

LOFTWARE™

EXECUTIVE SUMMARY:
LABELING TAKES ON INCREASED IMPORTANCE IN TODAY'S GLOBAL SUPPLY CHAIN

Supply chains and the solutions used for managing them have become increasingly important as businesses become more global and interconnected. Globalization and digital technologies are changing business, especially as companies look to accelerate growth and expand into new markets. To do this, companies must create efficiencies in their supply chain and be able to address complex and ever-changing supply chain dynamics. This includes creating efficiencies in labeling with comprehensive Enterprise Labeling Solutions to optimize supply chain activities.

This is why, in order to establish a competitive advantage in their markets, companies must be aware of how labeling trends impact their organizations and supply chains, now and in the future. So, to get a clear picture on the changes taking place in the ever-evolving labeling space, Loftware conducts an annual survey on the impact of labeling on today's global supply chain. This year's sixth annual Top 5 Trends in Enterprise Labeling report outlines significant shifts in labeling that are impacting businesses and global supply chains at an unprecedented level. For our 2019 report, Loftware polled nearly **1,000** professionals from organizations across all major industries and **55 countries** to gather insights into the major trends in Enterprise Labeling for 2019.

This year's report showcases how companies are beginning to recognize the interconnected nature of Enterprise

Labeling and Artwork Management. Today's companies are realizing that as demands for labeling and packaging artwork have increased, it has become evident that there are many common requirements, as well as many shared challenges in these two areas. The report also highlights how company executives are taking a bigger interest in labeling, recognizing the importance of labeling when it comes to supply chain operations. These forward-thinking executives are seeing the significant impact labeling can have on the bottom line, along with recognizing the increased number of stakeholders who are taking a contributing role in labeling.

This year's Trends also shed light on the increasing demand for cloud-based labeling applications, noting the cloud as an increasingly prominent deployment method for enterprise applications. The report outlines how the cloud can ensure continuous operations for labeling in the event of potential disruption and offer other significant advantages. Our report also stresses how companies are struggling to manage control over labeling content even as they look to embrace new technologies like e-labeling. It also highlights how a common approach to content management and collaboration can help manage these challenges. Finally, our last trend highlights the growing focus on digital transformation and the impact that emerging technologies, including IoT and Blockchain are having on global supply chains.

Considering labels allow businesses to identify, group, ship, locate and track goods and merchandise that flow upstream and downstream in their supply chains, it's clear that labeling impacts both top and bottom lines. By understanding the important role that labeling plays, companies can create new efficiencies and cost savings to keep pace with a new multi-faceted, dynamic supply chain landscape. This is why leaders who embrace innovation and labeling as a key supply chain function will gain a competitive advantage in their markets.

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ENTERPRISE LABELING AND ARTWORK MANAGEMENT CONVERGE

Over the years, labeling has become more complicated as customer and regulatory requirements continue to evolve, and those managing product packaging have been challenged to meet aggressive product development and launch timeframes along with lengthy approval and review cycles. As demands in labeling and packaging artwork have increased, it has become clear that there are a host of common requirements, as well as many shared challenges in these two areas. Now, companies looking to automate and streamline processes are beginning to recognize the interconnected nature of Enterprise Labeling and Artwork Management. As a matter of fact, survey respondents noted that the top challenges in both Enterprise Labeling and Artwork Management were maintaining accuracy and consistency, along with regulatory compliance. This is why today there is a growing realization that by taking a common approach to address combined needs, companies can improve time to market, better address regulatory mandates, guarantee accuracy and consistency, mitigate risk, reduce complexity, ensure traceability, increase agility and optimize costs. This becomes increasingly important as modern enterprises look to launch and move products faster, comply with regulatory standards and ensure greater accuracy and consistency in their efforts to expand globally.

Facing Similar Challenges

Existing labeling and Artwork Management solutions have traditionally been siloed or not well integrated, creating

77% of all respondents stated that they see value in having a single solution that can handle the management and printing of both labels and packaging artwork

inefficiencies and redundancies across teams managing supply chain labeling and packaging artwork. At the same time, these companies are challenged to meet increasing variability driven by customer and regulatory demand that must be addressed in both supply chain labeling and product packaging. Therefore, the common challenge is to manage a range of varied content stored in a variety of different places. Additional challenges include reducing the number of permutations or templates/designs for labels and artwork and ultimately reduce the work involved in maintaining countless variations. In addition to this struggle to achieve consistency from a formatting perspective, there also are challenges around streamlining the review and approval of labels and artworks while validation becomes increasingly important for companies in regulated industries. Also, without proper processes in place, the creation and review of both labels and artwork is delayed, which can lead to more inaccuracy and increased risk of regulatory issues and customer fines. Collaboration between internal and external stakeholders can also be difficult as companies attempt to provide easy access to Enterprise Labeling and Artwork Management across the organization, as well as with outside business partners.

Addressing Common Elements

Frequently the content on a label is like that included on product packaging. Actually, it's quite common that Enterprise Labeling and Artwork Management utilize

70% of all respondents agree integration to existing business applications is becoming more important in managing content, data and images for both labeling and Artwork Management

the same content, images, warnings, translations and phrases. In both cases it's critical to have the most up to date content, which is why it's important to have a common approach to review and approve any data and images so that there is approved content for use available in a common centralized repository. Also, there are common stakeholders involved in supply chain labeling and product packaging that are looking to manage the same content - whether it's regulatory, brand, regional or customer information. In both cases, it's important to enable these stakeholders to manage labeling and product packaging smarter, faster and more efficiently with a configurable workflow framework, including eSignature capabilities. The right framework offers new levels of visibility and control for managing labels and artwork, so companies can define and manage approvals and workflow processes to eliminate bottlenecks, improve time to market and ensure compliance.

Creating New Efficiencies

Enterprises dealing with multiple locations dispersed across the globe have often struggled with implementing efficient processes for managing labeling and packaging. By taking a holistic view of Enterprise Labeling and Artwork Management companies can significantly improve operations and manage both labels and packaging artwork simultaneously, shortening lengthy

77% of those surveyed expect to print more labels and packaging artwork in house three years from now

approval cycles while reducing costs and simplifying system maintenance. An integrated, unified approach simplifies and streamlines workflows and approval processes to monitor and control label and artwork changes. Integrating with a range of ERP, PLM, manufacturing, supply chain and other enterprise applications ensures accurate, real-time content. This strategy also increases agility and reduces costs for companies looking to deal with customer, product, regulatory and regional complexities that impact both labeling and artwork management. Companies can now manage and source content centrally and dramatically increase the speed, accuracy, visibility and flexibility required for dynamic labeling and artwork.

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TREND 2: EXECUTIVES ARE RECOGNIZING THE IMPACT OF LABELING

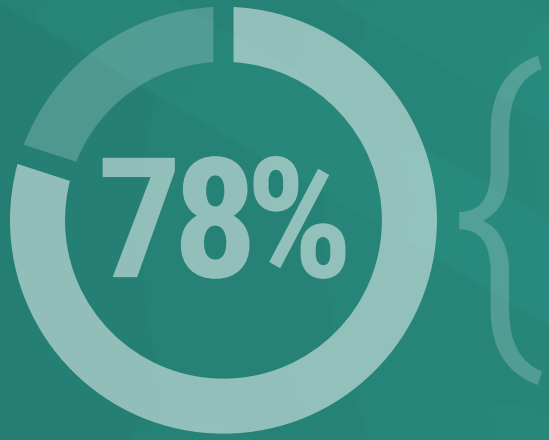
As businesses extend their reach across the global supply chain, labeling has become more prominent, involving multiple departments and requiring a new level of attention. Also, it's clear that labeling has become more complex with evolving customer and regulatory requirements. All this along with increasing recognition from prominent analysts like Gartner and IDC has resulted in top executives becoming more aware of labeling initiatives and the impact they have on businesses. For instance, this year IDC released its first MarketScape study on Enterprise Labeling, which assesses the capabilities and business strategies of vendors in the space. The report suggests that companies recognize Enterprise Labeling as an extension of their supply chain application architecture because it enables improved supply chain operations. Additionally, labeling can have a positive impact on a company's bottom line by reducing maintenance costs, avoiding fines due to non-compliance and preventing supply chain disruption. These are just a couple reasons why many visionary executives are taking more interest in their company's labeling strategy. This is supported in the survey with 89% reporting that management views labeling as strategically important.

Labeling Impacts the Bottom Line

Labeling has always been mission critical, but too often it's overlooked as part of the company's supply chain strategy. However, labeling plays a critical role having a significant impact on operational efficiency, regulatory compliance and customer satisfaction. This is why top

85% state that if labeling fails it would have an impact on the company's bottom line

executives are beginning to understand the undeniable impact that labeling has on a company's bottom line. Enterprise Labeling yields operational efficiencies that translate into significant cost savings generated from reduced capital expenditures, lower IT costs and eliminating penalties and fines. Additionally, by extending labeling to partners and suppliers companies can maximize supply chain efficiencies and eliminate costly relabeling.



78% feel it would be beneficial for management to have access to analytics for labeling

Increased Stakeholders Require Greater Visibility

With the number of stakeholders involved in labeling increasing, it's important to provide added visibility to labeling so that evolving requirements can be addressed and managed more effectively. This is why companies today are standardizing on enterprise-class labeling technologies to simplify and automate processes while improving collaboration among their many teams. As involvement across the organization increases, this demands more attention from executives, creating an expectation for greater insight to labeling activities which can be secured through a higher level of analytics and reporting. An Enterprise Labeling Solution which enables multiple departments and stakeholders to have secure access while providing business intelligence capabilities helps to meet that need. Real time data on the status and health of labeling activities across a global enterprise allows executives to leverage analytics to be better informed and drive improvements and cost reductions.

Scale Labeling with Ease

Visionary executives understand that as they continue to expand their presence internationally, it's important to have the flexibility to scale everything – including labeling - to meet new business requirements. Whether adding more locations, expanding into new regions, increasing print volumes, or manufacturing new products, companies must be able to

92% of all companies state that it's important for labeling to scale easily to accommodate business growth

extend labeling processes and enable all user to access accurate and consistent labeling data to adhere to corporate standards. The focus, even when deploying solutions in a distributed fashion, is to continue to maintain the ability to leverage common data sources, content and configurations across sites. This type of distributed approach is essential to handle the rigors of global infrastructures, allowing companies to avoid outages and connectivity issues, while providing high availability, failover and disaster recovery capabilities. Standardizing on an Enterprise Labeling Solution enables companies to eliminate siloed efforts across the globe. By centralizing control over global labeling, companies can empower global locations, as well as external suppliers, vendors and partners to access and use standard and approved labels and data and easily scale labeling as the organization grows.

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TREND 3: INCREASING DEMAND FOR CLOUD BASED LABELING APPLICATIONS

More than ever, businesses are embracing the cloud as a preferred deployment method for enterprise applications. To keep pace with the market, businesses of all sizes, industries and geographies are adopting SaaS (Software as a Service) solutions with many more companies planning to make the shift in coming years. There are a host of advantages in adopting the SaaS model for business solutions such as labeling. Not surprisingly there is both a growing trend for companies to integrate labeling with their cloud-based enterprise applications as well as a distinct move to embrace cloud based labeling solutions. In the survey, 68% of respondents believe their organization would benefit from deploying a SaaS based Enterprise Labeling application. This growing demand is driven by the understanding that cloud-based labeling simplifies maintenance and support, reduces IT involvement, streamlines global deployment while facilitating expansion to reduce operational costs and provide financial predictability. When it comes to cloud based labeling, it's important to deploy Enterprise Labeling Solutions that are built for cloud deployment to ensure flexibility and print performance, which are both essential for global labeling.

A Host of Benefits

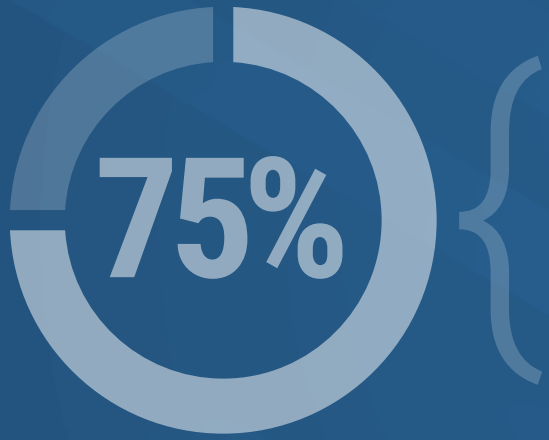
Businesses are moving more of their IT infrastructures to the cloud, so they can focus more on their core businesses, simplify maintenance and streamline their on-demand provisioning of hardware

70% stated that the cost savings and maintenance were the top two benefits of deploying enterprise applications in the cloud

and software. Using a cloud deployment and a SaaS financial model provides a great deal of flexibility and predictability. With this approach the need to acquire, configure, upgrade and maintain hardware and software is removed. There are no servers, no installation, no infrastructure required. This reduces operational expenses including IT resources and capital expenditures while, at the same time, it simplifies deployment and reduces maintenance. Another advantage is the financial predictability this model provides. Ultimately, deploying in the cloud and utilizing a SaaS model improves productivity, increases focus on your business instead of infrastructure, and provides cost certainty.

Enabling Continuous Operations

Cloud-based applications require a different approach to ensure expectations continue to be met. The challenge is that companies cannot trust that there is constant connectivity to global locations which can result in production and operational downtime that proves extremely costly. In order to de-risk global label printing, companies focus on labeling solutions that keep printing even when their connectivity to remote locations is interrupted. This is especially important when labeling is deployed in the cloud and local facilities need to run without depending on a full-time connection to



75% state that their remote or regional operations are dependent on connectivity to centralized applications

headquarters. This 'multi-site' capability allows users at remote facilities to access labeling from headquarters with the ability to failover to a local instance in cases where connectivity is disrupted,

ensuring continuous labeling operations at the facility level. Once connectivity is regained, label data and templates can be synchronized for each facility. Also vital are native print drivers that leverage built in printer capabilities and guarantee that labels can be printed reliably and in high volumes even at remote locations or facilities. Native drivers offer fast and efficient label printing, while meeting existing labeling requirements, independent of printer make and model.

Fitting in With Your Enterprise Architecture

When deploying on premise or in the cloud it's important to ensure that your labeling is designed to integrate with your existing enterprise applications. This allows label data to come directly from your sources of truth to guarantee that your labeling reflects consistent, current and accurate information. Whether you're

68% of respondents believe SaaS/Cloud will be their deployment method for enterprise applications three years from now

using S/4HANA or SAP ECC, Oracle EBS or cloud, Infor CloudSuite or another enterprise system, it's vital that the Enterprise Labeling Solution being used is designed and certified to integrate with your business application environment including heterogeneous models where some applications are in the cloud and others are on premise. By integrating labeling with your business applications, you leverage existing business processes to drive labeling processes and key data sources to achieve label accuracy and consistency—while eliminating data duplication.

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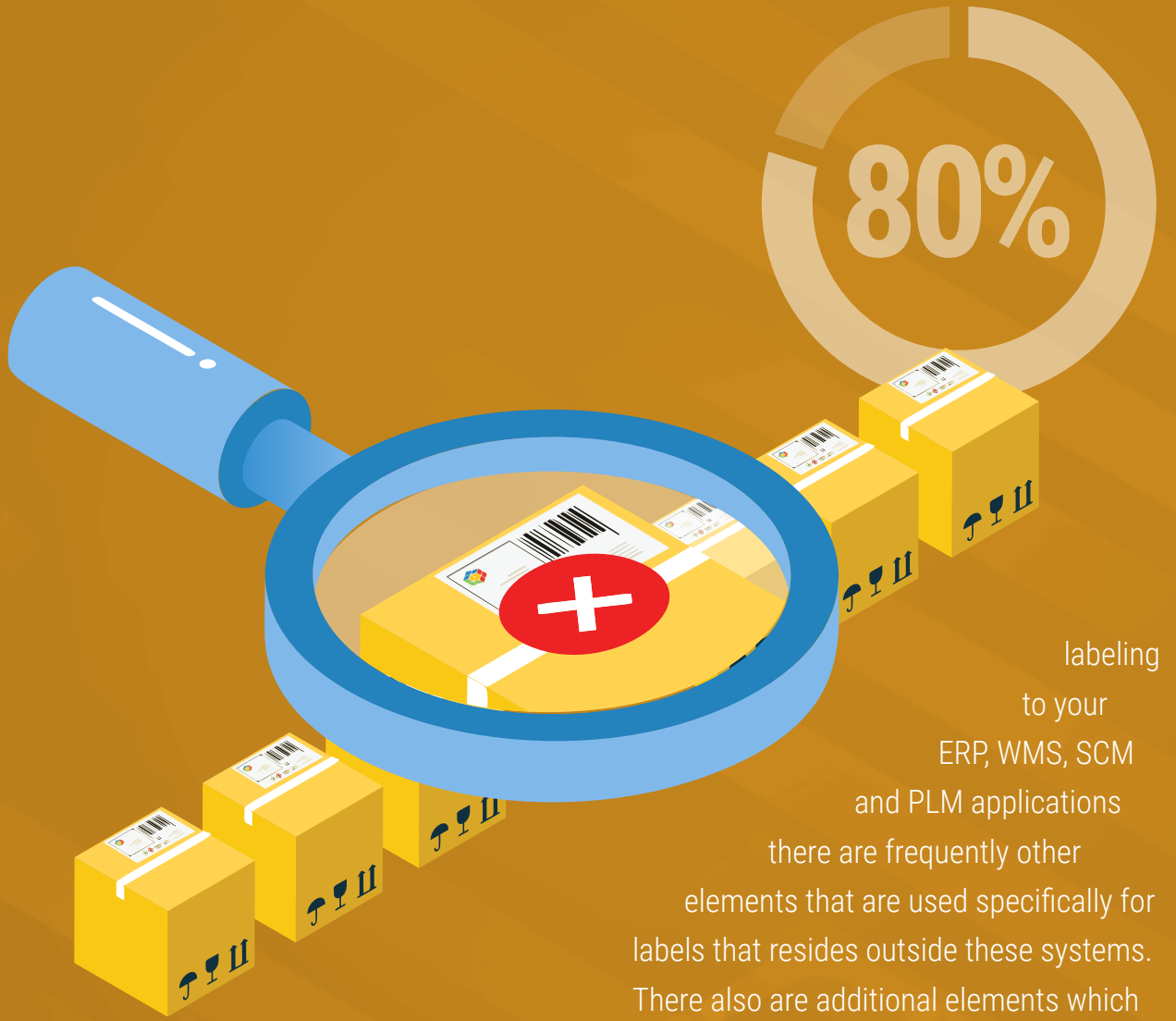
COMPANIES STRUGGLE TO CONTROL LABELING CONTENT

Companies today understand that managing control of content used in labeling is critical to ensuring compliance and enforcing brand consistency. However, they struggle to manage control of content – including data, images, phrases. The challenge is that this content used in labeling comes from multiple systems and, in some cases, various labeling applications which makes it almost impossible to manage. This is why it's essential for companies to drive content from their sources of truth for label data and to have centralized content management to help ensure they have both the correct content and the latest version of a label. Enabling companies to rely on centralized content management allows them to eliminate extraneous spreadsheets and databases and manage this critical labeling data in an easily accessible, central location. By eliminating multiple, disparate sources of data, companies are able to gain more control and eliminate risk of error. Having content stored, managed and accessed easily though one single repository available for use across a global enterprise, provides auditability regarding who changed what and when and creates time and cost efficiencies while improving label consistency.

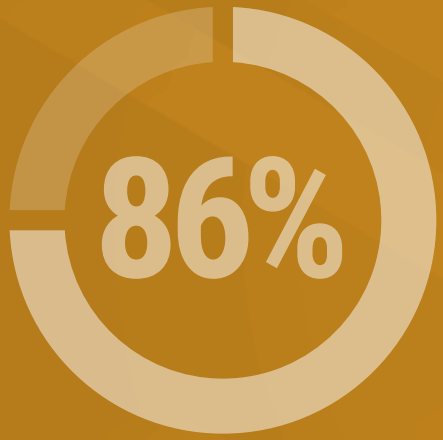
Challenges Around Content Control

As the amount of content (data, translations, images, etc.) and content versions required for labeling continues to increase, companies struggle with how to manage this content which is often sourced from a wide range of systems. The challenge always is around finding



80% surveyed are concerned with having incorrect or inaccurate content on labels

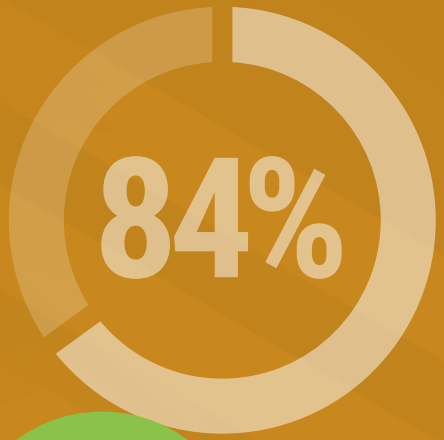
where all the content currently resides and that the right content finds its way onto the label. Although best practice is integrating labeling to your ERP, WMS, SCM and PLM applications there are frequently other elements that are used specifically for labels that resides outside these systems. There also are additional elements which might not be resident in the appropriate system resulting in many companies struggling to manage content in separate databases, spreadsheets, or file systems. With all of this different data in so many different places it becomes difficult to ensure that all these elements have been appropriately reviewed and approved for use since these systems are not part of the formal labeling process and are most often not properly integrated with existing labeling solutions. At the end of the day, whether organization's content is in an external system or in an Enterprise Labeling system, it is key to ensure that approved content is optimized for real time labeling printing. This helps mitigate risk, improve control and compliance, and reduce the overall labeling process complexity.



86% surveyed believe it would be valuable to have a solution for managing content within their labeling solution

Collaboration is Key

When it comes to content management, collaboration is key. With so many stakeholders involved in the process it's important to ensure that content used for labeling can be accessed from both sources of truth as well as in centralized content management. By leveraging advanced, configurable workflow and content management different stakeholders and locations can review and manage relevant labeling data, images and templates. This removes the potential of duplication of data and ensures the right people have access to label content at the right time. Each team of stakeholders has their own interests and requirements that must be appropriately represented on the label. For this to happen, individual departments need to collaborate across the enterprise to ensure accuracy, create efficiencies and streamline mass label changes.



84% of respondents believe their companies will use electronic labels or provide scannable barcodes for customers to obtain additional information three years from now

Labeling Takes on New Forms

Labeling today is being represented in both physical and digital forms. For instance, electronic or e-labeling is becoming more commonplace, especially in industries including food and beverage, consumer products and life sciences. That's because e-labels can more easily provide more information as well as more up-to-date information to consumers than is currently conveyed on a printed label. With e-labeling you're not limited to the real estate on the physical label and to having the content be fixed or immutable. Companies can scan a label to obtain incremental information about how a product was sourced and about its journey through the supply chain. This technology enables medical device companies to offer electronic Information For Use (IFU) pamphlets in the cases where they can't fit all of the information on a printed label. As the base content for e-labels needs to be the same content that was first delivered on the printed label, it only makes sense that Enterprise Labeling is an enabling technology. Between integrated data and content managed centrally, Enterprise Labeling Solutions can source data needed as the foundation for e-Labeling.

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TREND 5: JOURNEY TOWARD DIGITALIZATION CONTINUES

Digital transformation is having dramatic impact on global supply chains. More businesses are investing in technology to augment or replace existing practices to improve supply chain operations, which is resulting in increased efficiencies and cost savings. When it comes to digitalization, labeling is at the forefront because it offers a key source for curating digital information, with the physical representation of digital information often being encoded in the label. With 79% of those surveyed reporting that they are using barcodes to help in traceability, it's clear that labels offer a gateway to digital information. It's important to note that labeling is the heart of it all, as it becomes more commonplace to scan a label to obtain vast amounts of information about the product and its journey through the supply chain. This is why labeling is becoming more and more critical as traceability, especially as Internet of Things (IoT) and blockchain are moving from theory to reality.

Traceability Through Labeling Offers Better Risk Management

As companies expand their supply chain to include new partners and regions, they need better visibility to ensure quality and faster reaction to events—from fake or falsified goods to counterfeit parts to faulty products that impact customer safety (which is especially critical when it comes to pharmaceuticals and medical devices). To manage these concerns, companies need to be able to track and trace a product's travel through the supply chain. This means being able to track a product throughout its lifecycle by

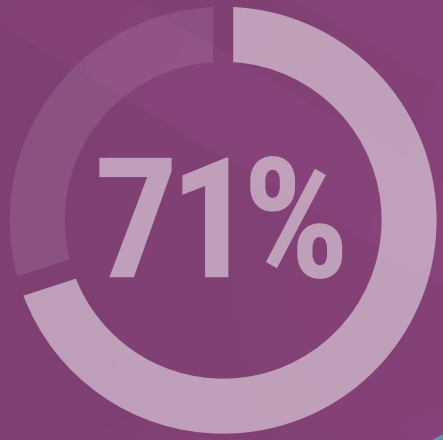
59% of those surveyed are concerned about supply chain disruption as a consequence due to a lack of traceability

leveraging the label as a vehicle to capture and record relevant data along the way.

The label provides that essential link so that companies may capture specific product information, which may include certificates of origin, PO numbers, lot numbers—all of which can be used to link back to the source. Enterprise Labeling is an enabler to traceability which provides a full audit trail of a product from its parts/materials/ingredients to its manufacturing and distribution to the end user or customer. With proper traceability and labeling, companies can respond quickly to costly disruptions of all kinds across their supply chain to manage risk and expediate any necessary recalls.

Labeling Meets the Internet of Things (IoT)

A growing trend across multiple industries, IoT impacts how businesses communicate and connect. The opportunity to monitor and manage an entire network of devices and other 'things' provides untapped opportunity for a wide range of solutions including labeling. In prior years, shipping information would simply be included on a barcode. Today with IoT, there are a range of opportunities to provide vast amounts of information including temperature, time passage, weight, location and navigational path all captured through intelligent device sensors and stored in enterprise applications. The capture of this information requires the integration



71% of respondents believe IoT technology will be used in their supply chain three years

of data from more sources than ever before – often in real time – and the label is the passport for connecting all of that information to a product, which can be tracked throughout the supply chain.

That's why labeling is considered an important component as businesses evaluate their IoT strategy. As companies are implementing their IoT initiatives they are also looking for their labeling solutions to leverage IoT to more proactively manage global printer networks, update device settings, send print requests and monitor status so they can know more about the state of their printers before printing even occurs.

Blockchain Transforming the Supply Chain

Interest in blockchain is on the rise and it is becoming apparent that there is potential for it to become a game-changer for supply chain management. But what is blockchain and how will it impact labeling and your supply chain

Nearly 50% of those surveyed feel blockchain will impact their supply chain three years from now

operations? Essentially, blockchain is an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. An online ledger shows exactly what has happened to a specific package so users can easily see the chain of custody. Every time a product changes hands, the transaction could be documented, creating a permanent history of a product, from manufacture to sale to consumption.

This means that potentially anyone can see and know where and how a product traveled to its ultimate destination. The label of course is the identifier for each product and the vehicle for providing this information every step along the way, providing the physical representation which enables the traceability required for blockchain to work. The beauty of this new technology is that it provides complete transparency with a full record or history of transactions. This provides obvious advantages for industries like food & beverage, where the trend of Farm to Fork is becoming more important as food safety and recalls have become areas of focus. There is also potential to dramatically reduce time delays, added costs, and human error that often plague supply chain transactions today. While widespread adoption of blockchain may be years from now, it offers the promise of enhanced transparency and more security while eliminating manual processes, speeding up transaction times and increasing efficiencies.

Loftware is the global market leader in Enterprise Labeling and Artwork Management solutions with more than 5,000 customers in over 100 countries. Offering the industry's most comprehensive digital platform, with SaaS, cloud-based and on-premise solutions, Loftware redefines how enterprises create, manage and print complex labeling and packaging artwork and scale across their operations. Loftware solutions integrate with SAP®, Oracle® and other enterprise applications to produce mission-critical barcode labels, documents, RFID smart tags and packaging artwork. Our combined platform – whether for labeling, packaging artwork or both – enables customers to uniquely meet regulatory mandates, mitigate risk, reduce complexity, ensure traceability, improve time to market and optimize costs as they meet customer-specific, brand, regional and regulatory requirements with unprecedented speed and agility.

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