Barloworld Logistics

supplychainforesight

RETHINKING SUPPLY CHAINS

Exploring latest technologies and the impact on supply chains | May 2017

CONTENTS

PREPARING FOR A FUTURE UNDERPINNED BY SMART TECHNOLOGY

Faced with ongoing disruption that is largely being fuelled by technology and exciting software development, almost every industry is being forced to rethink traditional strategies and operational approaches. As a leader in developing smart supply chains we at Barloworld Logistics constantly keep our finger on the pulse, analysing trends and creating ways in which new improved methods and viable disruptive technologies can be adopted.

Within the vast realm of global supply chain management and logistics, such disruption is already becoming evident. New technology platforms and software systems are challenging leaders and managers to discard legacy systems and invest in more efficient ways of implementing key tasks, optimise clients businesses, enabling smart supply chain solutions to create a sustainable competitive advantage.

For decision-makers and stakeholders within the supply chain, it has become imperative to identify and understand the opportunities that are emerging in this context. According to research firm Frost & Sullivan, logistics global spend is expected to reach $10.6 trillion by 2020, with transportation accounting for the majority of the cost at 65%. With this in mind, decision makers need to ensure that they are directing this spend to the right places and in doing so, effectively future-proofing the value chain.

By examining the current landscape and taking into account the state of technology today, it is clear that certain trends will be shaping every aspect of supply chain management and logistics. Chief among these trends are the emergence of autonomous vehicles, 3D printing, unlimited opportunities created by analysing and extrapolating big data, blockchain technology and the role of online marketplaces.

GEARED FOR AUTONOMOUS LOGISTICS

Having investigated the development of autonomous vehicles, Frost & Sullivan has predicted that most moving vehicles within logistics - from forklift to delivery fleets, will be semi-autonomous and some fully autonomous in the not too distant future[1]. With major technology companies such as Uber, Amazon and Google pouring investment and intellectual capital into self-driving vehicles, it is expected to become a major part of daily business operations.

For the supply chain, autonomous logistics will translate into Autonomous Guided Vehicles, Truck Platooning, Autonomous Trucks and Ships, Autonomous Cargo Rail and drones for last mile delivery.

With regards to delivery drones, these are expected to transport packages to nearby places within one or two minutes. Existing and proposed projects in this space include the DHL Parcelocopter, Google's Project Wing Drone and Amazon's Prime Air. Notably, Amazon has proposed a 200-foot designated airspace (between 200 and 400 feet from the ground) to be reserved for drone flights.

While it may appear to be far future thinking, the concept of autonomous logistics is already becoming a reality!

DATA-DRIVEN DECISIONS TAKING OVER

While it may be a now-clichéd phrase, data is evidently the new oil – and it is flowing into every type of business at a rapid pace. As more unstructured data becomes integrated into daily analysis and evolving into structured data, it will undoubtedly lead to enhanced efficiencies and quicker, calculated decision-making within the supply chain.

Growing access to data will mean that analytics will move from reactive to pre-emptive to anticipatory. Amazon, for example, through its anticipatory shipping model, will know what you want even before you know you want it, creating an even stronger emergence of predictive analytics[2].

For the wider industry and logistics stakeholders, predictive and prescriptive analytics is already presenting a number of applications. These include route optimization in real time; 'control-on-the-go' as mobile devices are used to increase enterprise visibility, faster reaction times to supply chain challenges for example natural disasters; and product tracking data to understand customer purchasing behaviour and support requirements.

For business leaders, the critical element of big data is to understand where and how this surge of information can be harnessed to benefit the supply chain.

SHIFTING TO ONLINE MARKET PLACES

With regards to brokerage related services within the supply chain, it is predicted that two key platforms will disrupt the status quo: mobile based and online marketplaces. With retail already undergoing its own digital transformation, it is unsurprising that supply chain management will react to these changes.

More specifically, the emergence of online marketplaces within the supply chain will involve the closer integration of all parties to include all stakeholders namely sellers, buyers, freight forwarders and financial institutions – all connected to each other through an open, online platform.

As a natural expansion of this trend, mobile based services and platforms will soon be able to aggregate a network of local couriers, matching individual deliveries in real time to the optimum carrier according to who is the nearest, available the quickest and best suited to fulfil that specific job.

Mobile-based freight brokers are seeking to outdo traditional brokerage firms by offering higher asset utilisation and expedited revenue allocation. This will ultimately mitigate the 8-15% average of empty miles travelled per truck in North America and is a key value proposition.

HARNESSING BLOCKCHAINS AND SMART CONTRACTS

Although it is a term more frequently associated with financial technology businesses, blockchain technology is poised to impact key functions within logistics. In short, the blockchain refers to distributed cryptography based upon an open-source and real time data platform. This platform verifies digital transactions on the network and is arguably set to become the new operating system for supply chain and logistics globally.

By integrating this technology, blockchain can enable a strong and secure exchange for shared logistics, coordinating a vast array of activities from sharing unutilised space in a shipping container or warehouse, to optimising truck fleets. Stakeholders can eliminate supply chain opaqueness by having a record of all logistics transactions in blocks. It can, for example, provide insights around drivers, routes and on-the-move goods and services. Added to this, blockchain technology can yield important benefits with regards to B2B transactions – such as cross border payroll processing and smart contracts.

“We know – thanks to Hayek – that information is best used when it is not centralised and when it is not being monopolised by some central institution. We know that flat and non-hierarchical systems use info best… New innovations like the blockchain make this possible” Patrick Byrne, CEO, Overstock.

One standout example of this technology already in use is a platform called Ethereum, a decentralized platform that runs smart contracts. These are contracts steered by applications that ‘run exactly as programmed, without any possibility of downtime, censorship, fraud or third party interference[3].’

For logistics stakeholders, the blockchain platform is set to facilitate in negotiating prices and monitoring inventory levels that will result in minimizing transaction costs and building more agile supply chains. In addition, blockchain can streamline processes for multiple stakeholders within the supply chain, as well as initiate more secure forms of transactions and facilitate shared logistics opportunities in near real time. Consider the information used during an export or import process. If import terminals received data from bill of ladings a lot sooner in the process, shipping terminals and freight forwarders could plan and execute more efficiently without jeapordising sensitive information about the owners and value of the cargo. Costly delays and losses due to missing paperwork will be avoided.

Within the financial sector, institutions will have clear visibility of a supplier’s reliability, using this data to make calculated decisions like extending a much needed credit facility to aid trade.Within the retail and manufacturing sector, production forecasting could be greatly improved by identifying trends in product demand and distribution, while minimising paperwork and creating ease of flow of transactions and numerous agreements.

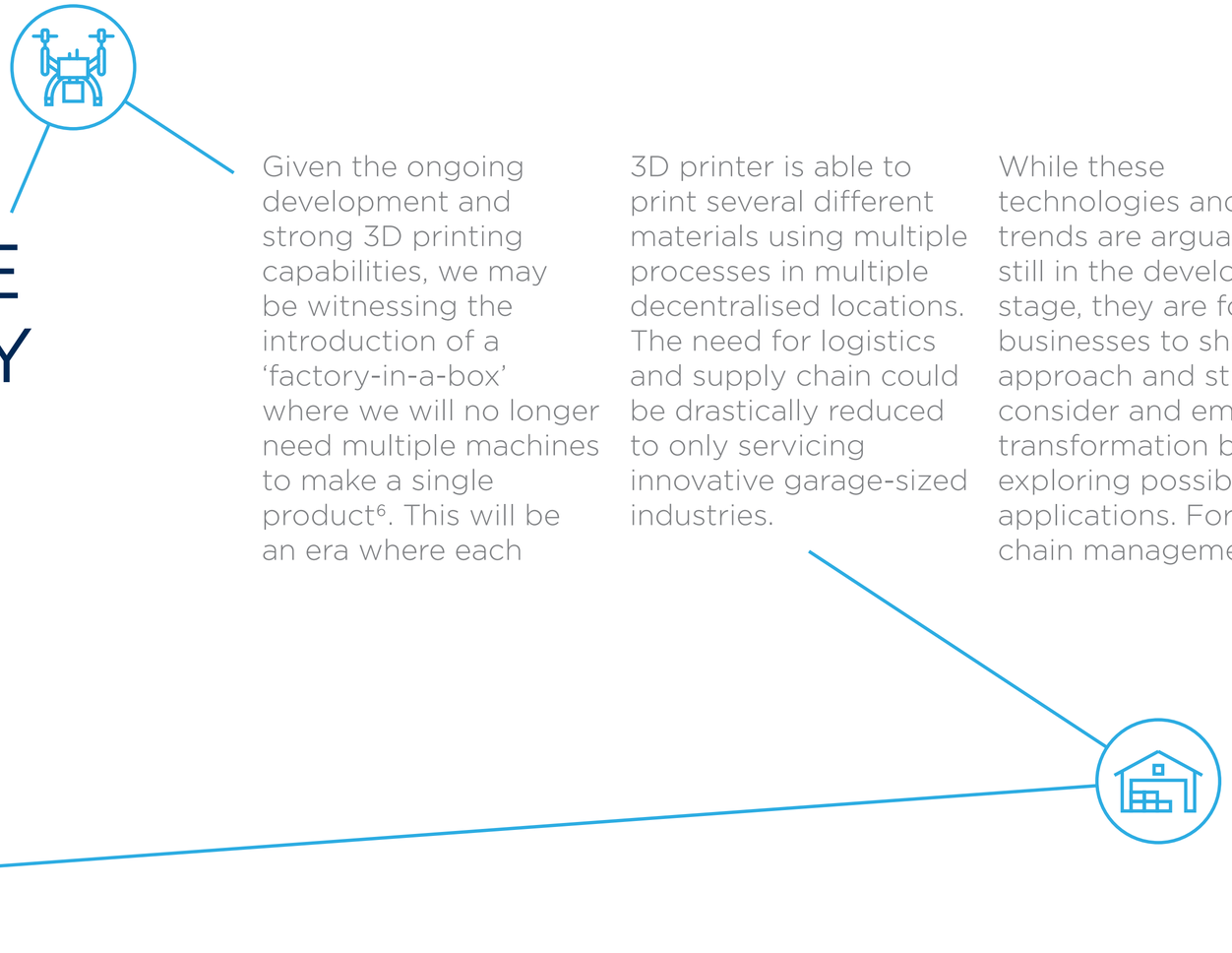
3D PRINTING

3D Printing technology and capability is improving daily with vast potential in freedom of design and decreasing production costs by up to 50%, translating from low cost homes printed within a day, to expertly customised medical implants and prosthetics. This will greatly impact large manufacturers and is already impacting purchase behavior within the retail sector. Nike is partnering with HP and using the HP Jet Fusion 3D printer to realize 3D printed footwear at greater speeds than ever before, enabling a new level of customization[4].

GE Aircraft has developed the world's largest commercial jet engine using 3D-printed metal parts for the GE9X twin-engine jet[5]. One of the parts include 3D printed nozzles, replacing conventional nozzles that previously had over 12 welded parts. This has led to 25% weight reduction, increased fuel efficiency and is said to be the company's quietest engine to date, dramatically reducing engine complexity, with production planned for 2020. (J.Coren, 2016).

This could greatly affect the shipping industry, most especially when 95% of goods that are currently shipped could be 3D printed.

THE EMERGENCE OF FACTORY IN A BOX



Given the ongoing development and strong 3D printing capabilities, we may be witnessing the introduction of a 'factory-in-a-box' where we will no longer need multiple machines to make a single product[6]. This will be an era where each 3D printer is able to print several different materials using multiple processes in multiple decentralised locations. The need for logistics and supply chain could be drastically reduced to only servicing innovative garage-sized industries.

While these technologies and trends are arguably still in the development stage, they are forcing businesses to shift their approach and strongly consider and embrace transformation by exploring possible applications. For supply chain management and logistics stakeholders, we at Barloworld Logistics believe that the emergence of these trends serve as both inspiration and motivation to begin the process of future-proofing and implementing sustainable processes, right now.

Barloworld Logistics

References

1. Phil Howarth Senior Partner Frost & Sullivan Future of Logistics presented at the Barloworld Logistics supplychainforesight event March 2017
2. https://www.forbes.com/sites/onmarketing/2014/01/28/why-amazons-anticipatory-shipping-is-pure-genius/#4f1e5644605e
3. https://www.ethereum.org/
4. http://apis-cor.com/en/
5. https://www.ge.com/stories/brilliantfactory
6. Barloworld Logistics supplychainforesight based on publicly available information.