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Emerging Technology in Supply Chain

Annotated Works Cited

Autry, Chad W et al. "The Effects of Technological Turbulence and Breadth on Supply Chain Technology Acceptance and Adoption." *Journal of Operations Management* 28.6 (2010): 522–536.

https://smu.primo.exlibrisgroup.com/discovery/fulldisplay?docid=elsevier_sdoi_10_1016_j_jom_2010_03_001&context=PC&vid=01SMU_INST:01SMU&search_scope=MyInst_and_CI&tab=Everything&lang=en

This publication is a study on the use of the acceptance of new supply chain technology by industries. The relevant part of this peer-reviewed study is the inclusion of an appendix that lists different supply chain technologies summarized and includes their key benefits. It includes the RFID discussed in class but it also includes 25 other technologies such as Geographic Information Systems and Automatic Replenishment Systems. This will be used in the presentation as a source of examples of different available technologies of which we will select some to focus on more in depth.

Banker, Steve. "20 Things to Know About Artificial Intelligence for Supply Chain Management." *Forbes*, Forbes Magazine, 8 Jan. 2019,
<https://www.forbes.com/sites/stevebanker/2019/01/01/20-things-to-know-about-artificial-intelligence-for-supply-chain-management/#2cc98ef05371>.

The author discusses artificial intelligence and its applications to supply chain. Artificial intelligence is machine learning that can continually update its own model to increase the accuracy of its own goal. Banker explains that with artificial intelligence can help digital demand planning. AI uses algorithms and historical shipment data to create forecasts for the future. The machine is then able to use different algorithms to update its forecast as it receives more and more information. Banker explains that even with AI functionality increasing, supply chain is still ways away from being fully autonomous. This article will help our group explain artificial intelligence and its relevance in supply chain.

C.Basolea, Rahul. "Assimilation of Tracking Technology in the Supply Chain." *Transportation Research Part E: Logistics and Transportation Review*, Pergamon, 6 Sept. 2016,
<https://www.sciencedirect.com/science/article/pii/S1366554516303453>.

This article looks at different studies on how different factors affected the implementation of tracking technology in supply chain hundreds of companies around the world. The study found that the three main factors that contribute to implementation are the product, the network, and the environment. We can use this source to look at what factors influence the implementation of tracking technology in supply chain and whether the value added is worth more than the costs of implementation.

Hedges, Lisa. "What Small Businesses Need to Know About AI in the Supply Chain." *Software Advice*, 12 Oct. 2017, <https://www.softwareadvice.com/resources/ai-in-supply-chain/>.

This article explains what AI can do as well as both the advantages and disadvantages of AI in supply chain. Hedges explains several common types of AI: Machine learning, Machine reasoning, Natural-language processing, Computer vision technologies, Business analytics, Robots. The article then discusses the advantages of AI. Firstly, AI can automate shipping and delivery with drones and self-driving trucks. Manufacturing lines can also be fully robotized. Additionally, smarter machines allow for a safer workplace. AI can be a disadvantage because the level of excitement surrounding AI gives the providers the advantage when marketing their products. This article will help us define the different types of AI in supply chain and demonstrates how AI affects supply chain.

Lacefield, Susan. "Drones in the Supply Chain: More than Just Last-Mile Delivery." *Supply Chain Quarterly*, CSCMP, 2016, <https://www.supplychainquarterly.com/news/20160912-drones-in-the-supply-chain-more-than-just-last-mile-delivery->.

This article focuses on the benefit of drones within the supply chain outside of just the last-step delivery (delivering the product to the customer). Just because the technology is advanced for the last step delivery doesn't mean it can't help with inventory management or have uses in maintenance and repair. Drones can be used to do safety checks so that a human doesn't have to, or even down to the base material gathering level. Drones are being used right now in mining facilities and farming locations around the world, because drones can view different landscapes through different lenses than a human can, such as thermal imaging or RF detection that could help humans optimize our own processes. This just shows how, just because these different

companies are investing in technologies for one part of the supply chain doesn't mean they are ignored by other parts of the supply chain.

Lehmacher, Wolfgang. *The Global Supply Chain : How Technology and Circular Thinking Transform Our Future / Wolfgang Lehmacher*. Cham, Switzerland: Springer, 2017. Print.

This book focuses on the principles of global supply chains. Chapter five discusses the shaping of the future of supply chains. It opens with the introduction to agile supply chains as smart chains and expands on nine areas of focus for creating agile supply chains. It then shifts into the importance of incorporating data management and striving for an autonomous supply chain to achieve the best agile supply chain. The chapter ends with a discussion of possibilities of new processes and their possible limitations. This chapter will serve as the source for agile supply chain and the significance of autonomaion in successful supply chains.

Nath, Ambeshwar. "Five Key Emerging Technologies Transforming the Supply Chain in Consumer Goods, Logistics and Retail." *ITProPortal*, ITProPortal, 26 Jul. 2019, <https://www.itproportal.com/features/five-key-emerging-technologies-transforming-the-supply-chain-in-consumer-goods-logistics-and-retail/>.

Amazon and other tech companies are known as "digital natives" so in order to catch up to them, every traditional consumer goods, logistics and retail (CRL) company have to learn to better utilize digital technologies. This article discusses the use of digital brain, blockchain, IoT, AR/VR, and 5G, many of which are great technologies that aren't being used to their full capacity; Nath goes on to discuss how these technologies can be maximized into a company. For each of the technology, Nath identifies the problem currently existing in a traditional business

model, discusses its use and advantages and gives an example of what the ideal business model would look like with its incorporation. Thus, this article is helpful in that it shows how companies like Amazon are successful by running on a digitalized supply chain and the advantages of a company slowly incorporating digital technology into their business model.

Ogle, Mike. "Which Emerging Technologies Will Help You Meet Your Supply Chain Challenges?" *CSCMP's Supply Chain Quarterly*, Supply Chain Quarterly, 2019,
<https://www.supplychainquarterly.com/topics/Technology/20190514-which-emerging-technologies-will-help-you-meet-your-supply-chain-challenges-/>.

The article goes through different emerging technologies and how they can be used by supply chain managers to solve problems. It also divides the technologies into two categories, those that are well tested and could be implemented in the near term, and those that have not been tested and are riskier to implement at this stage. After analyzing the different technologies, the article goes into warning that jumping in too quickly with emerging technologies can be expensive, and if they do not add value for the end customer then it is probably not worth investing in. This article can help us because it goes over how different technologies can help improve supply chains. It also discusses how different technologies solve different problems and help different levels of the supply chain.

Snow, Colin. "Amazon's Drone Delivery Plans: What's Old, What's New and When?" *Forbes*, Forbes Magazine, 20 June 2019,
<https://www.forbes.com/sites/colinsnow/2019/06/17/amazons-drone-delivery-whats-old-whats-new-and-when/#1a776a1035f9>.

In 2013, Amazon announced that they were planning to transition towards drone package delivery by 2018. As it is now 2019 and that hasn't come yet, there have obviously been some issues. This article discusses some of the various issues that Amazon has run into implementing their plan, such as various FAA restrictions and other crash avoidance (both with other drones and surrounding interference) problems. This is useful both to talk about Amazon trying to get UPS out of its supply chain and showing that even for a business mogul like Amazon, developing infrastructure of this size and complexity can have unpredictable roadblocks that prevent progress.

Steinberg, Glenn. "How Emerging Technologies Can Transform the Supply Chain."

Manufacturing.net, Manufacturing.net, 29 Jan. 2019,

<https://www.manufacturing.net/article/2019/01/how-emerging-technologies-can-transform-supply-chain>.

As many companies are making the switch to a digital supply chain, it is hard not to see the benefits of being digital. In this article, Steinberg discusses examples of current challenges companies are facing and the advantages of utilizing technology to remediate these problems. Steinberg then goes on to talk about what a company should do when making the switch by discussing the use and benefits of the three key digital supply chain trends which are: lights-out planning, blockchain, and 3D printing. This article is helpful in showing that in this day and age, companies are required to make changes to incorporate digital technologies in their supply chain to keep up with the changing time; this goes to show how technology is incorporating it's way into the supply chain and business model.