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**Individual Assignment 5: Attack Feasibility**

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**ITSCM 731: MANAGEMENT OF INFORMATION ASSURANCE AND SECURITY**

You work for a criminal organization that hacks into IT systems of companies and governments for monetary gain. Most of the hacks are ransomware attacks using phishing emails. Revenues last year exceeded $100M.

Your boss hands you the article “Digital partnership involves ADM, Bunge, Cargill, Louis Dreyfus” and asks “It has always occurred to me that a few companies building a blockchain that controls the vast majority of some part of a vital supply chain might be a great target for us. Is this the case here?”

The companies are in all parts of the agriculture business, especially the oilseed business (copra, cottonseed, palm kernel, peanut, rapeseed, soybean and sunflower seed). They control much of the domestic food supply chain and a large fraction of the global food supply chain. They are competitors.

And yet, they are collaborating on a digital platform? Is this about digital resilience or digital lockout, namely, a way to control the oilseed market such that no other oilseed provider can participate in the platform and oilseed customers will get locked into the digital platform through integration into their ERP systems?

Here are five questions to answer (each worth 1 point):

1. How much of the oilseed market is controlled by the four companies domestically and globally?

Based on the article the four companies – Archer Daniels Midland Co. (ADM), Bunge Ltd., Cargill, and Louis Dreyfus Co. – are collaborating to standardize and digitize global agriculture shipping transactions. While the article does not explicitly state the exact market share controlled by these companies, it does mention that they are major players in the agriculture industry, especially in the oilseed business. These companies are widely recognized as major players in the industry, and this means they have a significant share of the market; however, it is difficult to find the exact percentages.

I was able to find a list of the top 10 companies in the oilseed market which are as follows:

Archer Daniels Midland

Bunge Limited

Cargill

Wilmar International

Richardson International

Louis Dreyfus Company B.V.

CHS Inc.

Ag Processing Inc.

ITOCHU Corporation

EFKO GROUP

\*\* I had trouble locating actual numbers of production amounts or control percentages without having to pay for reports, so I am not sure where I was supposed to be looking for the control amounts. Please let me know if there is a source, I should be using specifically for this. Thank you! \*\*

1. What is the economic value in USD ($) of these markets?

Per Expert Market Research, the oilseeds market in 2022 attained a market value in USD of $286.52 billion.

Per Precedence Research, the oilseeds market in 2021 attained a market value in USD of $256.36 billion and is projected to reach $385.45 billion by 2030.

1. Are there any examples of a blockchain like this being hacked using ransomware?

I had some difficulties finding an exact example of a blockchain like this being hacked using ransomware. Supply-chain attacks, where hackers compromise widely used software to distribute their malicious code, have become a prevalent threat vector. An illustrative example is the recent software supply-chain attack involving the installation of a backdoor program named Gopuram into the installer of the widely used VoIP application, 3CX. This attack was attributed to North Korean hackers and targeted cryptocurrency companies. This attack involved software compromise and targeted cryptocurrency companies; it did not specifically target a blockchain system. Blockchains, with their inherent decentralized and immutable nature, pose unique challenges to attackers attempting ransomware attacks. The distributed nature of blockchains makes it difficult for a single point of entry to compromise the entire system, as was the case in the 3CX supply-chain attack. The scarcity of examples showcases the robust security mechanisms inherent in blockchain technology. The complexities of attacking blockchain systems suggest that they may be less attractive or feasible target for hackers seeking to use ransomware.

1. Are there any examples of any of these four companies being hacked successfully?

ADM – I did not find any specific examples of this company being successfully hacked, there is an article from the Wall Street Journal that talks about how ADM has defended itself from previous cyberattacks and that they are focusing on bolstering their cybersecurity defense in anticipation of future attacks.

Bunge – I did not find any specific examples of this company being successfully hacked.

Cargill – Cargill has been successfully hacked. A cyberattack was able to temporarily knock out the timekeeping system Kronos at Cargill keeping it offline using a successful ransomware attack in December 2021. Kronos is a third party service so Cargill themselves were not directly attacked, but a vendor they used was. There were then further claims from employees that Cargill during this time failed to pay regular and overtime wages.

Louis Dreyfus Co. – I did not find any specific examples of this company being successfully hacked.

1. Why or why not would an attack against one of these companies work to bring down the entire domestic or global oilseed supply chain? Is it worth it?

An attack against one of these companies could potentially disrupt their operations, impact their supply chain partners, and create uncertainty in the oil seed market. However, whether such an attack could bring down the entire domestic or global oilseed supply chain depends on several factors, including the resilience and redundancy measures in place within the supply chain, the response capabilities one of the affected companies, and the overall structure of the industry. Determining if the attack is worth it, is a subjective question. While it might result in short-term gains for a criminal organization, the long-term consequences, legal repercussions, and ethical considerations should be carefully evaluated. I think ultimately the effort that would need to be put in to attack one of these companies could very well outweigh the gained ransom if it was successful.

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*Oilseed market (by product: Sunflower, soybean, sesame, cottonseed, rapeseed; by type: Animal feed, edible oil, by breeding, genetically modified, conventional; by biotech trait: Herbicide tolerant, insecticide resistant, other stacked trait; by end user: Household or residential area, commercial or corporate sector, automobiles; by application: Oilseed meal, vegetable oil) - global industry analysis, size, share, growth, trends, Regional Outlook, and forecast 2022 – 2030*. Precedence Research. (n.d.). https://www.precedenceresearch.com/oilseed-market

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