MediSure

Executive Summary

According to a report by PWC[1], counterfeit pharmaceutical drugs are considered to be the world's largest fraud market with sales going up to as high as $200 billion per year. The invasion of these drugs in the legitimate supply chain has harmed or killed millions of people around the globe. Counterfeit drugs circulating in the market also damage the credibility of the legitimate brands. There have been global efforts in strengthening regulations in order to combat the proliferation of counterfeit drugs; however, their presence has been increasing throughout the years.

It is crucial that a system is put in place to protect consumers from the adverse effects of counterfeit drugs. Unique product IDs and other information can be placed onto the packaging but how do we make sure that these packages aren't just duplicated and stamped on to the counterfeit products? Once a counterfeit product has been detected, how do we lessen its spreading in the market?

Problem Area

Health Risks

Counterfeit pharmaceutical drugs pose serious health repercussions to unfortunate individuals who consume them. According to the World Health Organization, around 1 million people die annually after taking fake drugs. It is also estimated that there are 450 thousand preventable malaria deaths are caused by counterfeit pills.

Global Coverage

Even in secure markets, it is estimated that around 1% of all drugs in circulation are counterfeit. The numbers are more drastic in developing regions where the percentage of counterfeit drugs in circulation is as high as 70%.

Economic Effects

Pharmaceutical companies lose billions in sales to counterfeit drugs. In addition to that, they also have to spend money on anti-counterfeiting measures. This spending can hurt their bottom-line leaving them with less money to invest in research and development. When customers also unknowingly consume counterfeit drugs and develop complications, it's the brand's reputation that gets tarnished.

Seeing that counterfeit drugs cause problems in multiple layers, it is imperative that we create a solution that protects consumers and make drugs easier to verify.

Solution

We will utilize blockchain to implement a more robust system of verification and tracking of drugs throughout its lifecycle. It aims to answer the question on how we can link the physical product (drugs) and the digital data that we store on the blockchain and ensure that tampering does not happen or is detected in the product's lifecycle. The product's status will be updated at each point of the supply chain. The consumer scans the QR code to authenticate the drug.

During manufacturing, product information, unique ID, and a QR code will be stamped onto each product. This same information will also be pushed into the blockchain. The product will be verified at each point of the supply chain. When a product is scanned at a point in the supply chain where it shouldn't be yet, this automatically renders that product and its code as compromised. For example, a pharmacist or consumer scanning a product when it should still be at a warehouse will automatically be informed that the product is compromised. Scanning will also show the details of the drug which allows them to check for anomalies such as different purchase dates, purchase locations, and other inconsistent information. Inconsistencies signal that the drug's unique identity could've been duplicated and stamped onto a counterfeit drug. Once a product has been declared as compromised, every counterfeit product with the same QR code will automatically be detected.

Blockchain

Blockchain provides an immutable record of the drug at every point of the supply chain. This allows pharmaceutical companies a way to trace where their products could be compromised. Counterfeiters will also be unable to tamper with the data in the blockchain or insert their own unique IDs for their products on the chain.

A smart contract ensures that when there are violations or anomalies in the supply chain, a product is automatically nullified in order to make sure that the spread of counterfeit drugs circulating in the legitimate supply chain can be stopped.

This project will utilize a publicly accessible permission chain allowing authorized individuals in the supply chain to sign off on the product's movements while also allowing the consumers to see the full supply chain process of a product that they have purchased.

Market Size

This solution will be of value to every pharmaceutical company that wishes to protect the integrity of its brand and fight against counterfeit drugs. The global pharmaceutical market was worth $934.8 billion in 2017 and is estimated to grow up to $1.1 trillion in 2021[2]. There are huge losses to the pharmaceutical companies if counterfeit drugs continue to flow and if action isn't taken by them. There is a huge opportunity with the vast number of pharmaceutical companies around the globe. The initial focus will be in Asia which is the third largest pharmaceutical market[3].

Competitors

The 2 companies offering solutions built on blockchain to combat counterfeit drugs are SAP and IBM(Kenya). Both these companies utilize blockchain in order to allow the customer to authenticate the information on the package to the data the manufacturer has on the blockchain. This, however, has the vulnerability of the packaging code being cloned and stamped on to a counterfeit product. This is where our solution edges out its competitors by utilizing smart contracts to make it difficult for counterfeiters forge this information thus limiting the spread of counterfeit drugs.

Partners

There shall be partnerships forged with each country this solution will operate in. Each country has its own regulations with relation to pharmaceutical drugs, therefore specific requirements of the solution has to be adaptable to these regulations.

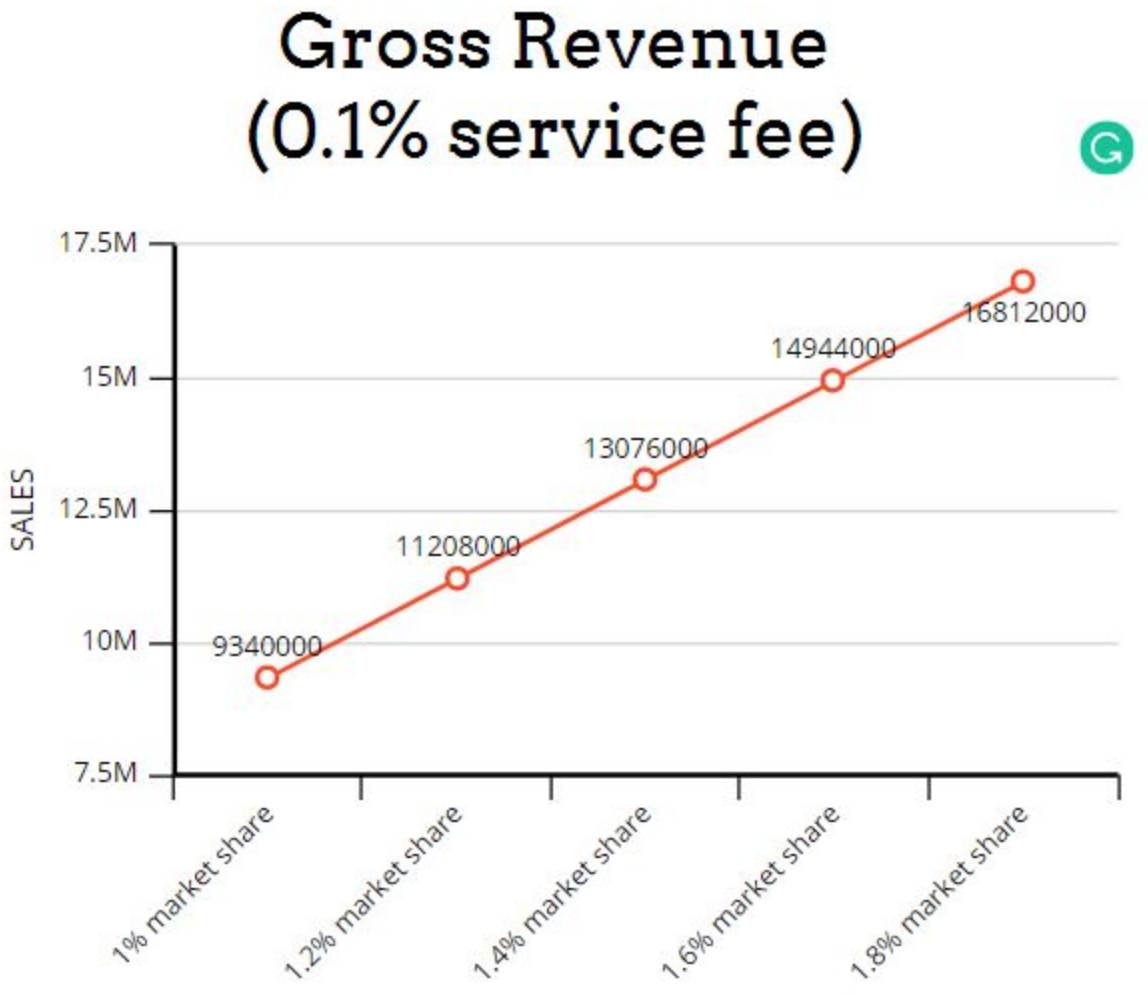
There shall be partnerships with various pharmaceutical companies and the members of their respective supply chains to ensure that this solution will be properly used within the supply chain.

Revenue Model

This solution will be offered as a service to pharmaceutical companies. There will be a 0.1% charge for the sales of every product enrolled within the service.

Financial Projections

Financial projections will be made with the assumption that this solution will have a 1% market share for the 1st year and an annual market share growth of 0.2%. The yearly gross revenue of the pharmaceutical industry is at $934 billion.



$934B yearly sales in the pharmaceutical market

Distribution Channels

There can be direct arrangements made with the pharmaceutical companies for the roll-out of this service. Certifications or acknowledgments can also be targeted from the regulatory bodies in order to make this service the premiere choice in allowing companies to comply with regulations.

Compliance Issues & Legal Issues

The drug supply chain is composed of multiple members that could span different countries. This solution will comply with the requirements of each regulatory body in the country it operates in. It shall also comply with the legal requirements in handling private information based on the policies set forth by the different members within a drug's supply chain.

Risks

In countries where there aren't strong regulations in place to combat counterfeit drugs, there might be less incentive for pharmaceutical companies to implement this solution into their business. This can be mitigated by marketing to these companies that beyond compliance with regulations, there is a benefit in ensuring their brand-name and reputation are protected.

Merits

Implementing blockchain and smart contracts within the drug's supply chain to combat counterfeit drugs will have a significant impact on the different stakeholders.

Consumers

Consumers will be better protected from the harmful effects of counterfeit drugs. They will have the capability to ensure the authenticity of the products that they will be consuming. It also increases their confidence in the pharmaceutical industry.

Pharmaceutical Companies

This solution discourages counterfeiters from producing replicas of their products because of the system in place which allows for the easy detection and nullification of these

products in the market. Pharmaceutical companies will be able to protect the integrity of their brand. There will also be long-term financial benefits when these companies stop losing sales to counterfeit products.

Governments
This solution aids governments in their fight against these illegal counterfeit products. It allows for a better investigation if there is a trustworthy immutable trace of where products have been. This also increases their ability to ensure public safety.

Team

This team is composed of students who have found success in various national and international innovation competitions together. Jeremiah has experience developing and pitching in multiple innovation competitions making him an amazing fit to lead the team as the hustler. Rannzel's quirky nature and his interest in all things technology build up the core of their development as the hacker. Louise's hipster keen eye for attention ensures everything from the customer experience to the marketing is spick and span. The glue that ties the team together is advisor Cris Militante. His experience as an IT consultant for several small and medium enterprises provides the team with invaluable knowledge and guidance. Sir Cris also has experience as a SAP Consultant, specializing in the materials management, procurement, and inventory and warehouse management phases of the supply chain.

Resources

[1]https://www.strategyand.pwc.com/media/file/Fighting-counterfeit-pharmaceuticals.pdf

[2]https://www.omicsonline.org/conferences-list/asia-pacific-pharmaceutical-market
[3]https://blog.marketresearch.com/the-growing-pharmaceuticals-market-expert-forecasts-and-analysis