A blockchain solution to drugs counterfeiting in the South Africa pharmaceutical supply chain

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Introduction

Pharmaceutical supply chain processes are complex and involve multiple stakeholders. Counterfeit drugs are one of the major global challenges in the pharmaceutical supply chain and healthcare sector that put patient lives at a high risk. The danger of counterfeit drugs is that once the drugs are tempered, they become prone to inflicting unknown side effects to the patients. In the pharmaceutical supply chain, blockchain can reduce instances of counterfeit drugs by tracking and tracing drugs effectively from the manufacturer to the patient.

Objectives

This study aims to develop a blockchain solution to address drugs counterfeiting within the South African pharmaceutical supply chain.

1) To investigate the contributing factors to drugs counterfeiting in the South African pharmaceutical supply chain.
2) To develop a blockchain artifact as a solution for drugs counterfeiting in the South African pharmaceutical supply chain.
3) To theorize the adoption of the blockchain artifact in the South African pharmaceutical supply chain.

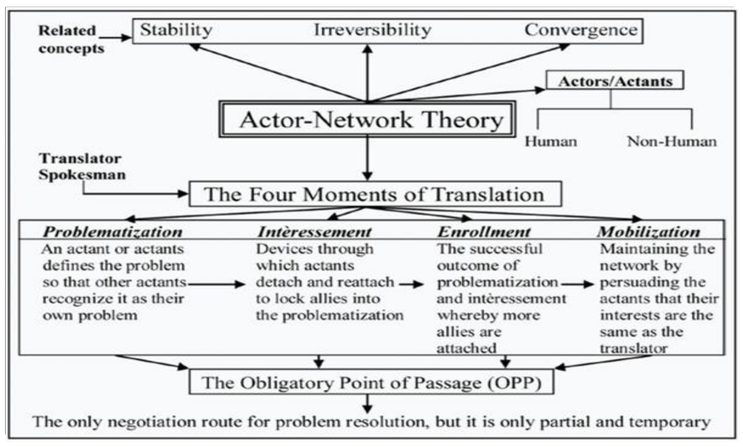
Theoretical Framework

Actor network theory is a sociotechnical theory that depicts how power shifts in a network of human and non-human actors as well as their interactions within heterogeneous networks (Callon, 1986).

Translation of an actor or actors into a network is accomplished through four moments of translation:

1) Problematization
2) Interest
3) Enrolment
4) Mobilization

Figure 1: Moments of translation (Adopted from Iyamu & Sekgweleo, 2013)



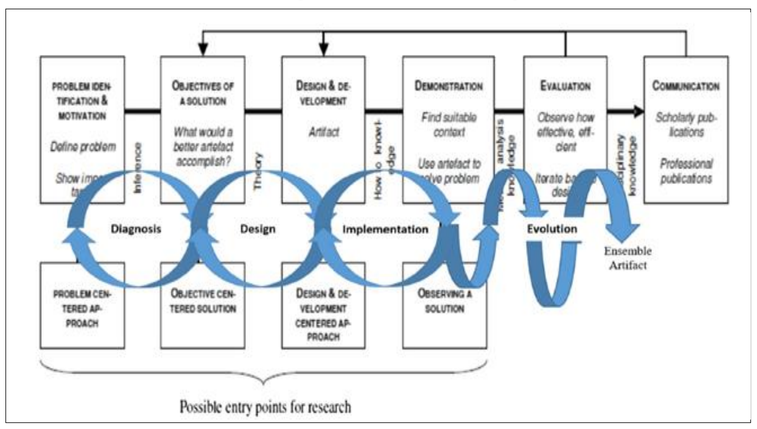
Methods

This study will adopt Design Science Research (DSR) methodology. DSR is defined as a research paradigm whereby a researcher answers questions relevant to human challenges (Iivari & Venable, 2009). The questions can be answered by creating innovative artifacts and contributing new knowledge to the body of scientific evidence. In particular the study use Action Design Research (ADR) which is the branch of DSR.

ADR utilises the following iterative processes:

1) Diagnosis
2) Design
3) Implementation
4) Evolution

Figure 2: Action Design Research (ADR) (Adopted from: Mullarkey and Hevner, 2018)



Data Collection

This research study will collect data in two phases.

1) In phase one, the study will make use of primary data collection to collect qualitative data through interviewing PSC stakeholders about counterfeit drugs challenges.
2) Phase two involves the artifact evaluation

Study Contribution

Contribution to this study is three-fold:

1) Academic contribution: In the literature it has been identified that there is a lack of research that depicts how Blockchain could be used to address counterfeit drugs in the South African pharmaceutical supply chain.
2) Artifact: This study will develop a blockchain artefact as a solution to address the challenge of counterfeit drugs in the South African pharmaceutical supply chain.
3) Framework: A framework that shows how a developed artifact can be adopted in the South African pharmaceutical supply chain.

Current Publication

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Conclusions

This proposal presented the underlying challenge of counterfeit drugs in the pharmaceutical supply chain followed by the objectives and the research questions that drives this study. It also presented the literature on the pharmaceutical supply chain, the blockchain technology, the counterfeiting of drugs, the theoretical framework to be used, and the adopted methodology which is design science methodology. It also highlighted on how data is going to be collected and gave the overview of the study contributions as well as the ethical consideration of the study.

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