

Increasing Resilience Through Advanced Analytics in a Pharmaceutical Company

Motivation / Background

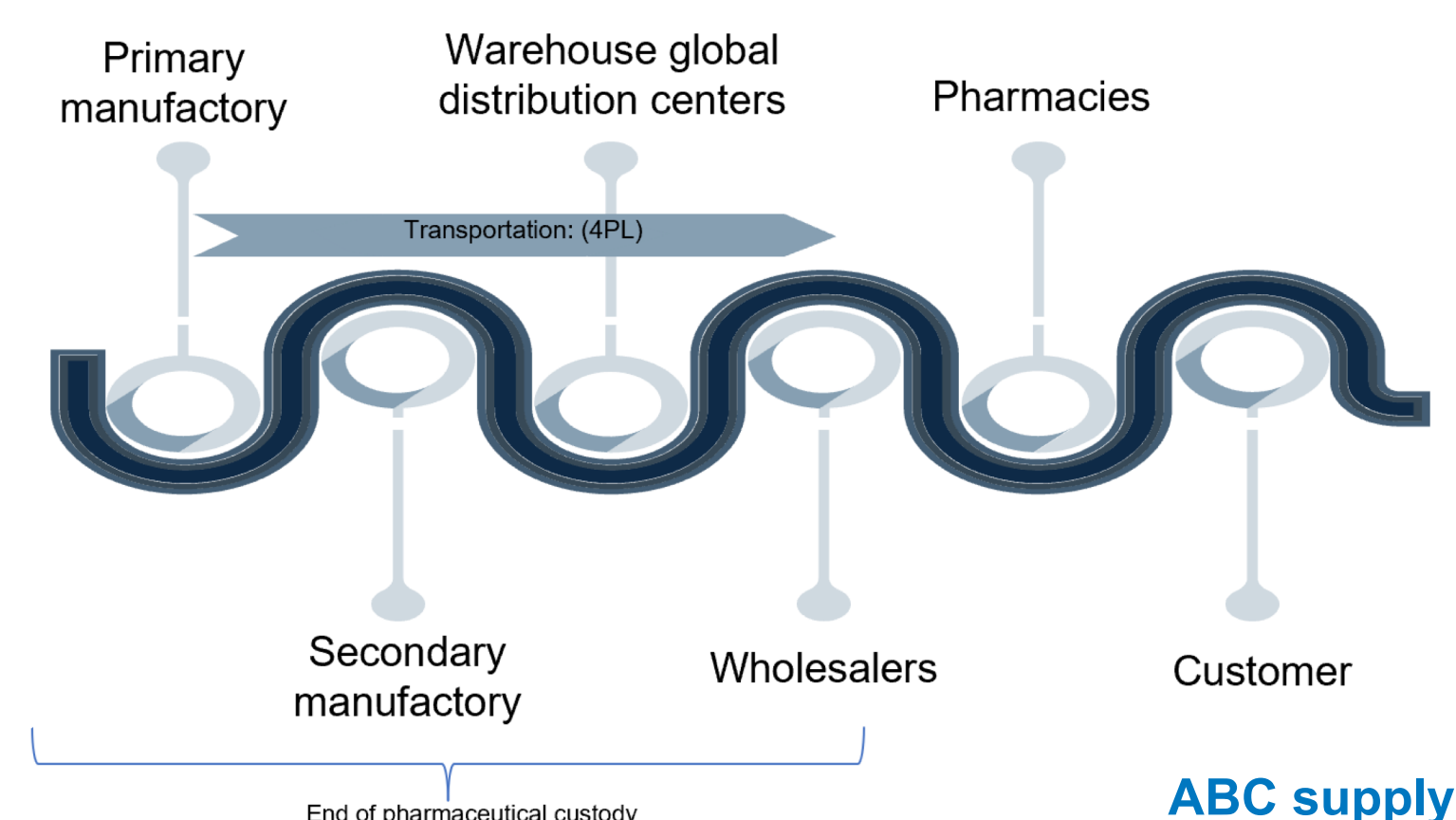
With the recent COVID-19 breakouts, ABC has had to respond to unexpected events and disturbances in their entire supply chain. These disruptions have revealed ABC's need to find digital capabilities to enhance their supply chain visibility and accelerate their capacity to react to such disruptions

This capstone project addressed the need of a global pharmaceutical company to understand what digital capabilities were required to be more resilient. In depth interviews, a resilience literature review and an application of a digital transformation framework helped identify transparency and advanced analytics as the main digital capabilities to increase resilience.

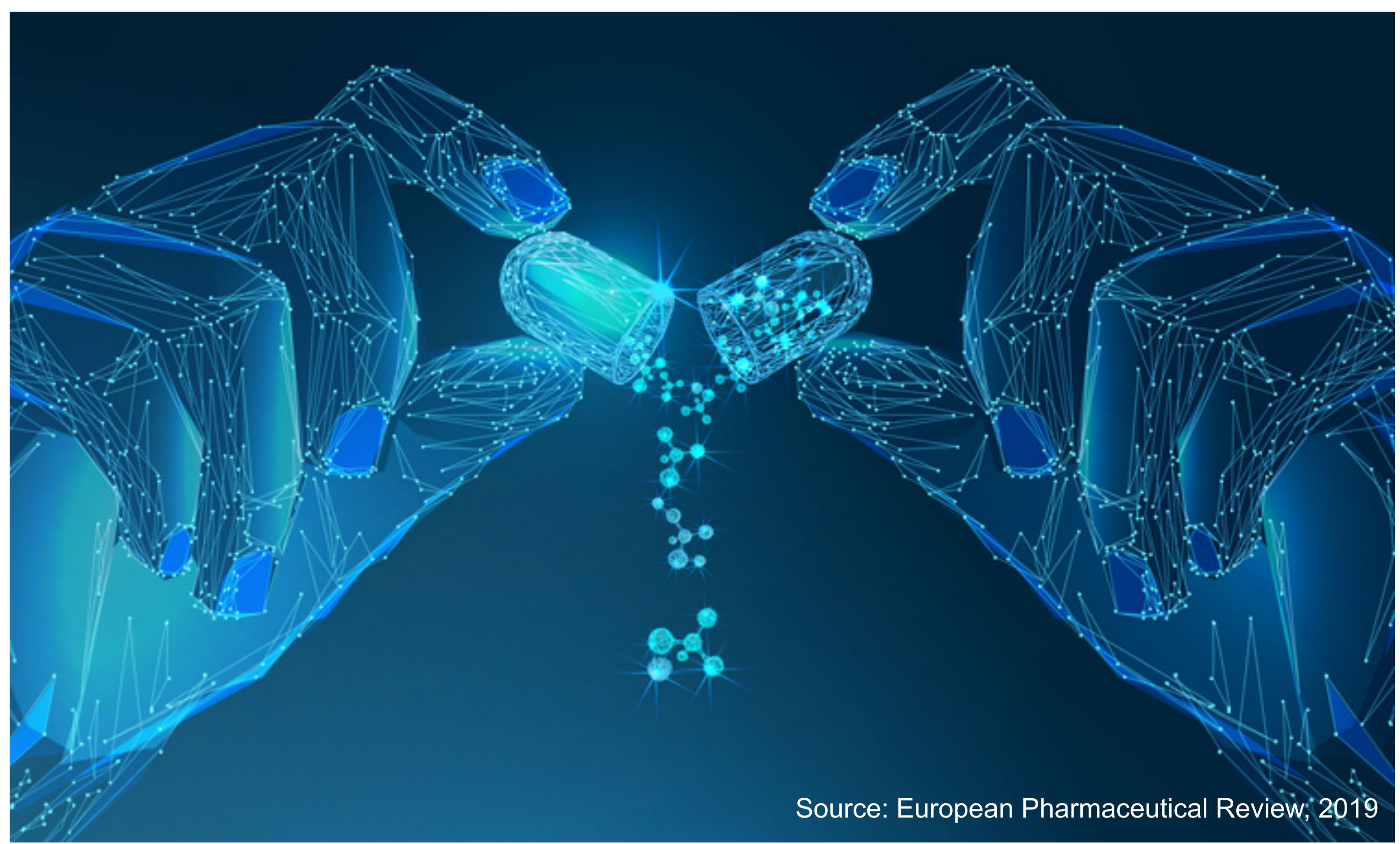


Methodology

- This capstone project is divided in two parts:
1. A qualitative study intended to identify the digital capabilities ABC could use to increase resilience, based on a literature review and internal interviews.
 2. A quantitative study applying machine learning to identify key parameters that influence fulfillment rates. The team's hypothesis is that the features that influence fulfillment rates were different before and during COVID-19.

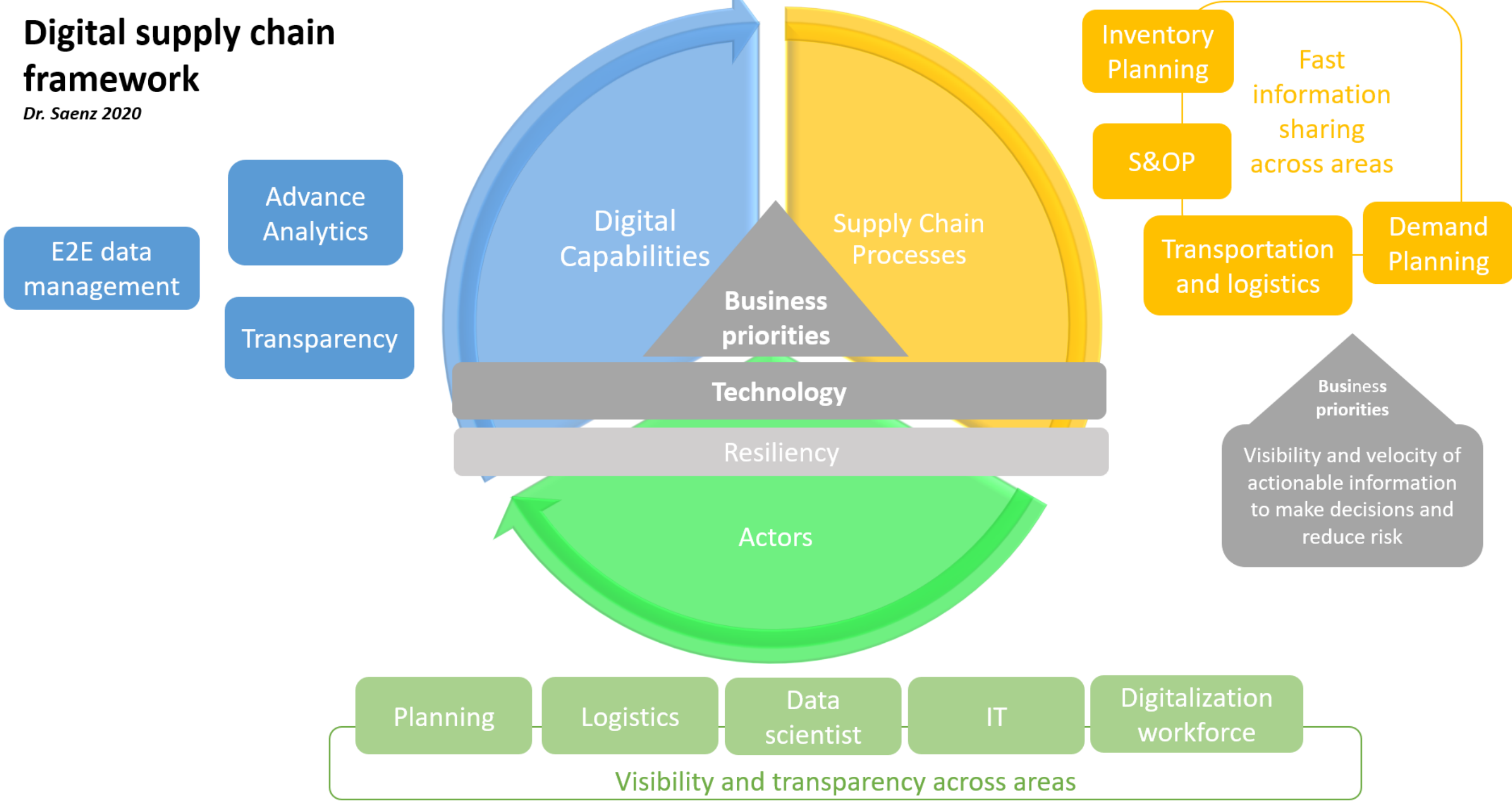


ABC supply chain map



Source: European Pharmaceutical Review, 2019

Qualitative Analysis

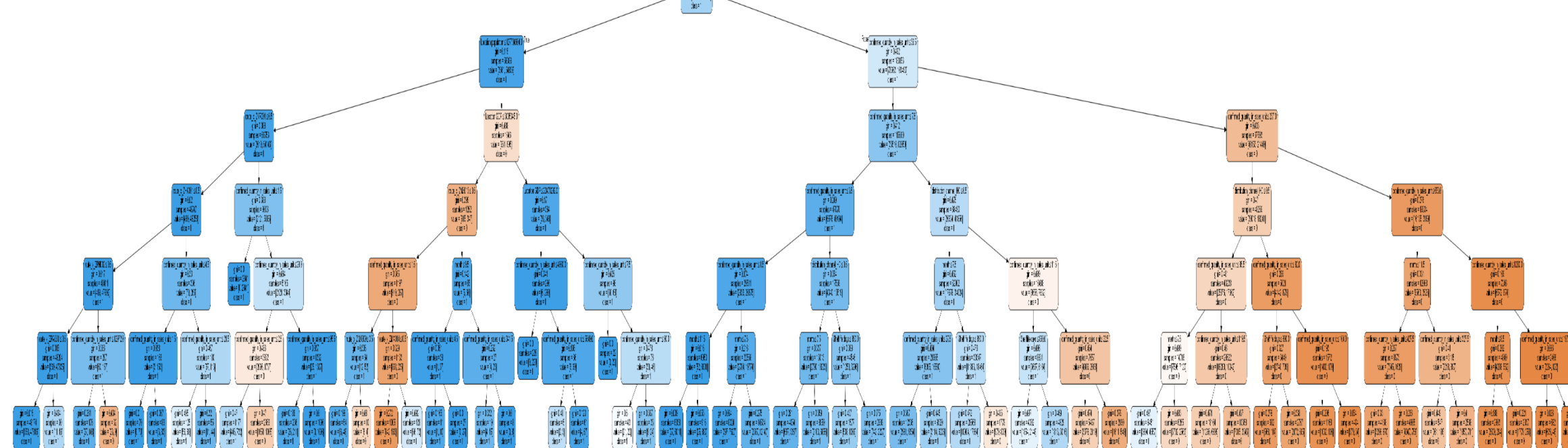


Source: Dr. Saenz 2020 Digital Supply Chain Framework

Quantitative Analysis

Target Indicator
 if (quantity of product delivered
 $\geq$ quantity of product ordered
 $\times 85\%$)
 & (date delivered + 3 days tolerance),
 then success factor = 1

Decision Tree Model



Key Insights

1. Combining qualitative analysis to identify the business pain points and quantitative analysis through machine leaning techniques can allow businesses to be more proactive in determining a strategy to ensure business continuity.
2. Transparency and advanced analytics are the main digital capabilities that could help companies increase their resiliency.
3. The most important factor that contributes to unsuccessful order fulfillment is the order quantity.



Valentina Anzola



Danning Chen