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Strategy for Pharma Business Expansion in Sub-Saharan Africa: A Case Study for Kenya
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Strategy for Pharma Business Expansion in Sub-Saharan Africa: A Case Study for Kenya

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Summary:
This thesis addresses the question of how far a global pharmaceutical company should vertically integrate with its downstream supply chain to properly balance risk and benefit in Sub-Saharan Africa. Considering the uncertainty and risks associated with doing business in this part of the world, a decision support and planning tool was developed to help project the likely financial impact and other business consequences of the sponsor company's future actions in the region.

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KEY INSIGHTS

1. Kenya is the country that shows the most promise as an option for business expansion in Sub-Saharan Africa.
2. Even in the case scenario of lower than expected demand and higher than expected currency devaluation, vertical integration leads to more benefits than the status quo.
3. There is value in implementing vertical integration in stages rather than all at once to maintain flexibility to adapt to uncertain market conditions

Wen Qi graduated from the international MIT-ZLOG Master Program in 2016. Wen had worked in supervisory and managerial roles within the Supply Chain and Logistics Management field over the last seven years before the ZLOG program.

Introduction

As a global leader in the pharmaceutical industry, PharmaComp, the company profiled in this study, has the potential to realize significant value and competitive advantage in Africa; a continent where current growth projections by 2020 are comparable to those of China. Recent projections obtained by PharmaComp, show that by 2020 it is estimated that the population in Africa will reach 1.3 billion people. By then the per capita pharma spending is also expected to rise from the current 17.4 USD to about 40 USD.

Spurred by a rising spending power and by the mounting cost of fighting diseases, Africa's healthcare spending was raised from $28.4 billion in 2000 to $117 billion in 2012 (Holt, Lahrichi, & Santos da Silva, 2015). Future projections of the continent's business potential have shifted dramatically in recent years. As a result, Sub-Saharan Africa (SSA) has become a priority for many global pharmaceutical companies including PharmaComp. The company is now examining its current supply chain strategy for SSA in order to position itself as a future market leader in the

region with a focus on increasing responsiveness to patients.

Comprised of 54 countries with a population of about a billion people, Africa offers huge consumer market potential for pharmaceutical companies. However the challenges for developing a sustainable market strategy are daunting and supply chain distribution is one of them.

To address these challenges, PharmaComp has recently launched a new strategy for Africa in an effort to expand its footprint on the continent. It plans to focus on 20 countries in a phased manner, having started with seven so called "Wave I[1]" countries in 2015, with a particular focus on the "Wave IA" countries of Ghana, Nigeria, Kenya, and Côte d'Ivoire

Yet for PharmaComp to truly realize the African Opportunity, it needs to fully understand the supply chain, including final price to patient, supply chain inefficiencies, barriers and opportunities for better distribution. It should also put in place effective mechanisms to ensure on-going understanding of the Sub-Saharan Africa distribution network.

Problem Definition

The objective of the thesis is to develop supply chain and business strategies that will enable PharmaComp to improve sales growth and access to more patients in SSA, while taking into consideration local business conditions, relevant risks, tradeoffs, and other options that could influence its decisions in the future. The company's current drug distribution network is very fragmented and contains a large number of intermediaries, thereby limiting its ability to efficiently distribute quality products to patients in the region. Ultimately PharmaComp would need to take on more responsibility in the downstream supply chain by vertically integrating with a local partner in order to address core issues in its supply and distribution chain. This thesis sought to answer the question:

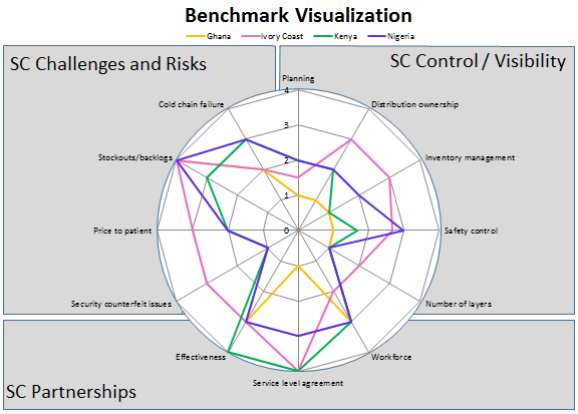
How far should PharmaComp vertically integrate with their downstream supply chain to properly balance risk and benefit in Sub-Saharan Africa?

Methodology

To achieve this goal, we structured our analysis as follows:

First, we explored academic and popular literature to identify best practices that have been implemented in SSA by pharma and non-pharmaceutical companies.

Second, by using a questionnaire that was distributed to PharmaComp internal staff and country representatives, we developed a benchmark to measure the downstream supply chain management. Feedback from the questionnaire suggested that many of the downstream problems are linked with lack of communication, cold chain failure, counterfeit drugs, and backlogs and stockouts, which could hopefully be improved upon with greater supply chain control.



Third, by using information from third party reliable sources (such as The World Bank, The World Health Organization, and The Heritage Foundation), we developed a scorecard to help compare and rank each of the Wave I countries in terms of risks and candidacy for business expansion. The countries were ranked on a scale from 1 to 5. Based on qualities like political and economic stability, logistical infrastructure, the state of the healthcare industry and the efficiency of trade, the scorecard indicated that Kenya is the Wave I country best suited for business expansion for PharmaComp. Thus Kenya was selected as a case study country for the remainder of the thesis.

	Wave I A				Wave I B			Score Weight
	Nigeria	Ghana	Ivory Coast	Kenya	Angola	Ethiopia	Gabon	
Governance Indicators	1	3	2	2	1	2	2	10%
Economic Indicators	2	3	2	2	2	3	3	10%
Healthcare Indicators	3	1	1	2	2	1	3	10%
Freedom of Business	3	4	4	4	3	3	4	20%
Logistics Performance	3	3	3	3	3	3	2	30%
Trade Indicators	3	3	3	4	3	3	3	20%
Overall Score	2.9	2.8	2.7	3.0	2.5	2.5	2.8	

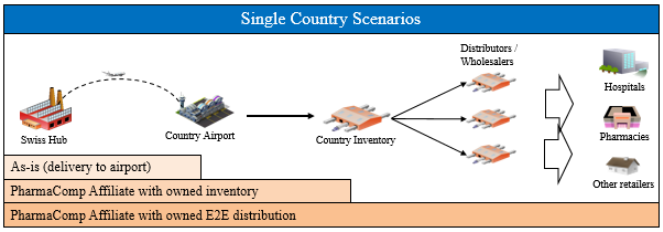
[1] Wave I countries: Kenya, Nigeria, Ghana, Côte d'Ivoire, Gabon, Angola, and Ethiopia

Fourth, we conducted an As-Is Analysis to determine the company's current position within SSA and to study projections of where business will be heading within the next several years in the region.

Finally, a series of scenarios consisting of different levels of vertical integration were selected to be evaluated further in the business case analysis. Controlling more of the supply chain would reduce cold chain failures, introduction of counterfeit drugs, and stock outs and backlogs; however, such a move could also require a high upfront investment in a market that may ultimately prove not to be profitable. In order to determine which level of vertical integration PharmaComp should consider moving forward, we selected three scenarios that incrementally increase the responsibility level. The three scenarios are described and depicted below:

1. **As-Is:** PharmaComp will continue to operate as it currently does, using direct shipments from Europe and having product changing hands at the country airport.
2. **Scenario I**: PharmaComp will invest in the creation of an affiliate company in the host country. With this new affiliate, PharmaComp will manage a warehouse of owned inventory within the country. They will also assume the risk that comes from selling their products in the local currency. Secondary distribution to customers will continue in the same way it is currently operating.
3. **Scenario II:** PharmaComp will invest in the creation of an affiliate company in the host company and also take responsibility for the distribution of products to their top customers. They will manage a warehouse of owned inventory, assume the risk of selling in a foreign currency, and also manage part of the secondary distribution.

Given the fact that the scorecard identified Kenya as the top candidate for SSA expansion, our Phase II analysis will focus on applying the above scenarios to the Kenyan distribution system.

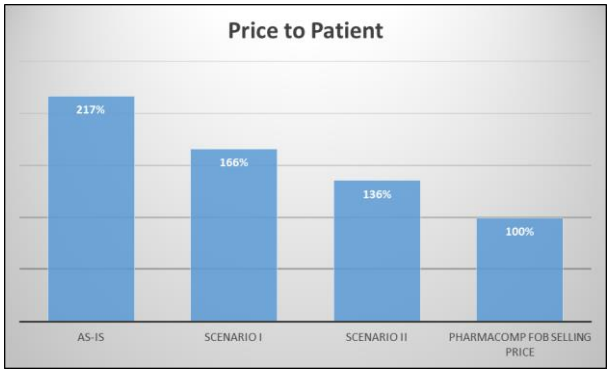


A business tool was then developed to analyze these three scenarios and to project the likely financial impact and other business consequences of their implementation. Due to the level of inherent uncertainty and risk associated with investing in Sub-Saharan Africa, we used Monte Carlo sensitivity analysis and real options analysis as useful decision-making tools to provide a feel for how investment results might be affected by changes to the values of critical variables.

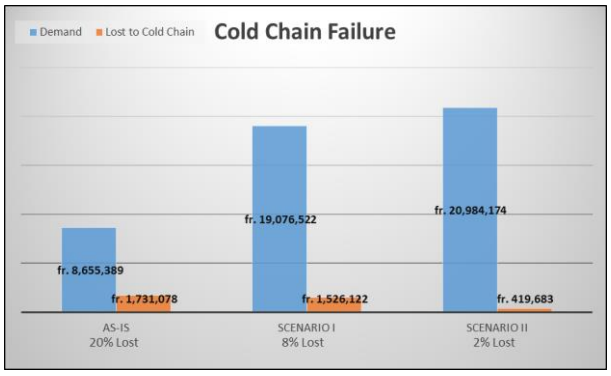
Kenya Case Study Results

Price to Patient and Cold Chain Failure Improvement

In addition to profitability, PharmaComp was also concerned with reducing price to patient and cold chain failure. When comparing the effect of the three scenarios on these two factors, it was clear that the further the vertical integration, the greater the improvement in these two areas. In the As-Is scenario, based on mark-up information, the patient pays 217% of the original price that PharmaComp sells to distributors. In Scenario I, that number falls to 166%, and in Scenario II, the price to patient is the lowest at 136%.



Cold chain failure also improves with vertical integration, it is estimated that the As-Is Scenario sees failure in up to 20% of products, while Scenario I could lower this percentage to as little as 8%, and Scenario II could lower the percentage to as little as 2%..



However, despite the benefits, Scenarios I and II also come with risks

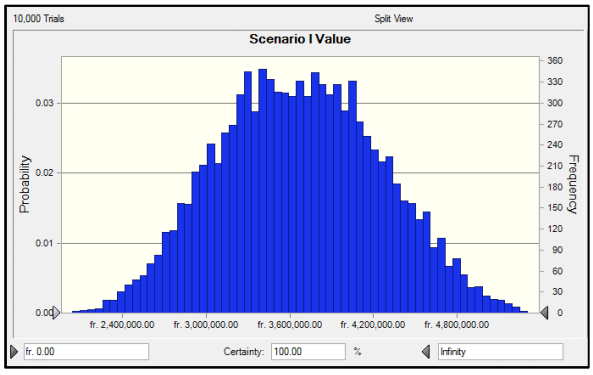
NPV Comparisons

Another important result of the thesis is the comparison of the profitability of Scenario I and Scenario II based on changes in the expected demand and changes in the additional investment cost that would be required to implement Scenario II. In general, Scenario II is the better option for instances when demand is high and investment cost is low, and Scenario I is better for options when the realized demand is lower than expected and the investment cost required for Scenario II is higher.

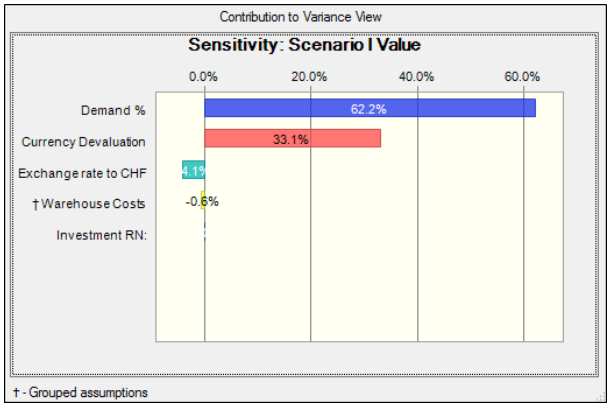
		Extra Investment in Scenario II					
		Δ 1.5 M	Δ 1.6 M	Δ 1.7 M	Δ 1.8 M	Δ 1.9 M	Δ 2.0 M
Demand	Low	Scenario II	Scenario I	Scenario I	Scenario I	Scenario I	Scenario I
	Medium Low	Scenario II	Scenario II	Scenario I	Scenario I	Scenario I	Scenario I
	Medium	Scenario II	Scenario II	Scenario II	Scenario I	Scenario I	Scenario I
	Medium High	Scenario II	Scenario II	Scenario II	Scenario II	Scenario I	Scenario I
	High	Scenario II	Scenario II	Scenario II	Scenario II	Scenario II	Scenario I

Scenario I Sensitivity Analysis

Scenario I seemed like the method of operation that PharmaComp would most likely choose for Kenya, so this thesis evaluated the decision to implement Scenario I using Monte Carlo sensitivity analysis. The analysis took into account fluctuations in demand, currency devaluation, and operational costs. The findings were that even in cases of low realized demand, high currency devaluation, and increased operational costs, Scenario I still proved to be more profitable than the As-Is Scenario.

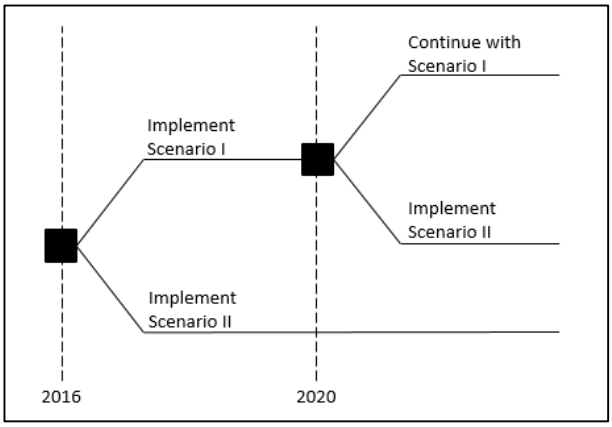


Furthermore, when examining contribution of each factor to the variance in the NPV (Net Present Value), the demand fluctuation was found to account for 62.2% of the variance. This means that out of all the uncertainty that was taken into account in this model, demand and market growth rate account for over half. Currency devaluation fluctuations were also shown to be an important part of PharmaComp's decision process because changes there can account for about one third of all the variation in the Scenario I trade off. However, changes in operational costs were found to be not so important. Rates could increase by up to 20% and these changes would account for less than 1% of the uncertainty.

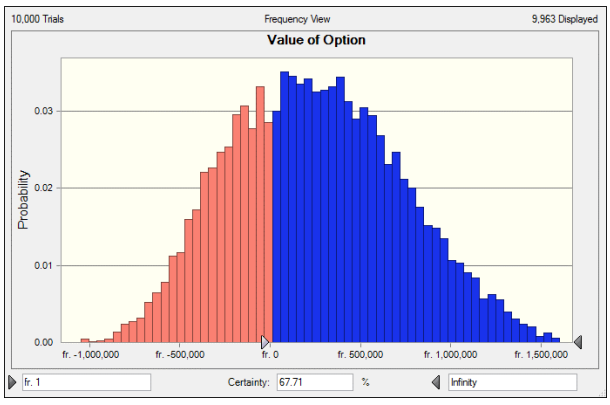


Real Options Analysis

The final analysis performed in the Kenya Case Study is a real option analysis to determine the value of waiting until 2020 to make a decision to implement Scenario II. It considers that PharmaComp can either choose to implement Scenario II right away, or they can choose to implement Scenario I today and wait until there is more information about the market conditions to decide whether or not to implement Scenario II.



This analysis found that 68% of the time it was beneficial to wait until 2020.



The instances when implementing Scenario II straight away was deemed the better option was in

circumstances of high demand and/or low investment cost. By waiting until 2020 to make a decision about Scenario II, PharmaComp is able to maintain some flexibility in their strategy.

Conclusions

Sub-Saharan Africa is a very fragmented region that faces challenges of poor infrastructure, inefficient trade, and political and economic instability. The decision of which country to select as a foothold in the region is an important one for PharmaComp to consider, and after building the Scorecard to compare the qualitative factors of the Wave I countries, we can conclude that Kenya is the country that shows the most promise as an option for the company to expand their business presence in the SSA region. Concurrently, we are also able to conclude that PharmaComp supply chain performance can be improved by increasing visibility and control over their downstream supply chain. Feedback from the Benchmark questionnaire indicates that many of the downstream problems are linked with lack of communication, cold chain failure, counterfeit drugs, and backlogs and stockouts. All of these problems could be improved upon if there were more supply chain visibility.

Our scenario analysis, which compared Scenario I and II as potential options for improving supply chain visibility, emphasized the importance of the effect of uncertainty in the decision. From our sensitivity analysis of Scenario I, we can conclude that even in the worst case of lower than expected realized demand and higher than expected currency devaluation, Scenario I is more profitable than the current state of operation. Nevertheless, Scenario II shows potential for even further benefit (both from a profit perspective and a price to patient perspective). However, through our performance of real options analysis, we can say that there is more benefit in waiting until 2020 than to implement Scenario II today. Four years from now, PharmaComp will have more information about the potential market and will be able to decide if it would be better to stay with the Scenario I option or move to using Scenario II.

Recommendations for Further Study

Regional cross-border trade is on the rise in Africa. African leaders have agreed to create the continent's largest free trade zone known as The Tripartite Free Trade Area (TFTA). TFTA covers 26 African nations in Eastern and Southern Africa. Thus, a regional supply chain network is becoming more and more viable. Further research could be conducted by PharmaComp to consider ways to segment the market that could take advantage of a hub scenario. Considering investment, risk, and economic scale, a single-hub scenario could be an option for their regional network design. A real options analysis similar to the one performed in this thesis could be performed on a hub scenario to determine if it could be beneficial to move to convert Kenya into a hub or to wait until a later point in time to make that decision.

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