A Cloud-Based Approach to Managing African Supply Chains

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With today's fast-paced, highly competitive global environment, organizations need supply chains that are agile, savvy, adaptive and scalable. Customers, suppliers, and trading partners are highly informed and demanding; they want accurate information in real time and require the right products arrive at the right location at the right time.

While some parts of Africa have been slow to achieve Internet penetration, some analysts believe progress in industrialized areas will proceed rapidly, with companies leapfrogging to the latest innovations and technologies.

A recent Vodafone publication notes that while Western companies are trying to overhaul and adapt legacy IT infrastructures, many African organizations are able to start afresh with mobile, cloud, and big-data systems.
We believe that this is exactly what is happening with cloud-based computing. Cloud-based SaaS solutions are poised to transform the manual supply chain into an automated, dynamic demand-supply network.

The Changing Dynamics of African Trade

To fully understand the 21st century African supply chain, it's essential to consider the history of trade to, from, and within the African continent and the African islands. For centuries, there has been a robust trade in raw materials from Africa moving to developed economies and finished products from those economies moving to Africa. The vast majority of this trade, particularly in central and South Africa, comes through ports and occurs on a country-by-country basis. But in the 21st century, two trends are significantly changing the nature of African trade:

1. Increase in the export of finished goods manufactured in Africa
2. Increase in intra-African trade between its regional blocs. This trade has grown by an estimated 10 percent in the past decade.

Understanding the regional blocs is essential to thinking about the African supply chain. There are 14 regional blocs, and intra-African trade takes place according to the agreements forged among those blocs. These agreements affect customs, tariffs, and shipping routes and determine the extent and direction of trade. Most countries belong to two or three of the regional blocs. Observers believe that **there is growing potential for seamless trans-border movement of goods and services between the regional blocs.**

The Movement of Goods in Africa

African exports include petroleum and petroleum products, natural gas, copper, gold, platinum, diamonds, coffee, and grains. Also, products manufactured for export include textiles, clothing, and shoes. (Source: World Economic Forum, 2016) . According to a recent article in The Economist, about 90% of the goods leaving or entering African countries and regional blocs are currently transported by ships. **This means that as overall trade increases, Africa's key ports will be under pressure to handle a larger volume of shipments.** Rail and inland waterway transport networks in Africa are limited, meaning that trucks and tankers transport most shipments from ports to their final destinations. The transport and logistics sector in Africa is under pressure to expand to meet these transportation needs.

The Role of the Internet and Industry 4.0

The growth of the Internet in the 21st century has affected production, the supply chain, and consumers worldwide. Industry 4.0, known as the "the fourth industrial revolution," connects the power of the Internet to manufacturing operations. Manufacturing and other business operations are computerized, data drives business activities, and the data is stored and analyzed for business purposes. With Industry 4.0, Cloud computing enables real-time data collection, analysis, and even automated decision making. **When automated processes are connected to an online, real-time network, the result is a 'smart factory.'** The smart factory uses data to increase efficiency and quality while decreasing downtime, waste, and delays.
In Africa, the impact has been uneven because access to the Internet varies widely from country to country in Africa. Nigeria and South Africa stand at 52 and 39 percent internet penetration, with Nigeria's rate of growth one of the fastest in the world. By contrast, Uganda has an Internet penetration rate of just 11 percent. (Sources: Internet World Stats, 2016, and Pew Research Center, Global Attitudes & Trends, 2016)

The Quest for Visibility

Getting high-quality data in real time — in short, finding out what's going on so you can take the right actions — is the key to improving supply chain management. This level of visibility is difficult to achieve. **Many companies that aspire to Industry 4.0 operations are discovering that they lack the necessary data about their shipments and assets — or that the data they are gathering is arriving too late to be useful.** In short, the problem is visibility. Some of the challenges they face include:

- How can they share important data (such as inventories and schedules) with the many partners involved in a complex supply chain?

- How can they track the condition and location of a product as it moves through its lifecycle — from raw materials, to manufacturing, to packing, to delivery to the end customer?
- How can they turn data about shipments or assets into decisions? How can they have these analyses available and ready to put into action, round the clock?

Solving IT Problems in Supply Chain and Procurement

The challenges presented by the African supply chain are not significantly different from the companies around the globe. Most multinationals and mid-sized businesses work with multiple partners, each of which have supply-chain processes and dependencies of their own. Typically, an organization has offices in multiple locations, each of which is requesting or tracking supplies and inventory. The central IT infrastructure is storing information, processing requests, and generating reports. At the same time, the organization is frequently changing suppliers, updating cost structures, and tracking shipments. Often the tracking is done manually, or by importing data from a supplier's system — which can result in additional expenditures for time or in costly errors. Of course, it's possible to improve information storage and communication by adding an in-house supply chain management system. But such improvements generally require both a significant investment in technology and the permanent addition of more manpower to set up and manage the expanded IT infrastructure.

Companies are also discovering that in-house data systems are a risk from natural or man-made disasters, including security breaches. A fire, power outage or other problem at a company's IT office can paralyze their procurement system. Even simple upgrade and maintenance downtime can take important business processes off line.

Roambee is helping customers across the globe tailor shipment-tracking and asset-monitoring solutions that work for the African supply chain.

As a technology company with extensive experience in Internet of Things (IOT) space, Roambee has devised a real-time, multi-sensor solution that gathers and analyzes data in the Cloud. Roambee's versatile sensors gather the data a customer requests and put that information in the Cloud where customers — and their customers — can easily monitor in-transit shipments and field equipment.

Roambee's customers are able to eliminate business disruptions and financial risks — with zero up-front investment for hardware or software.

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