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Sango Technology: Preparing for Take Off

This caselet was written by Byencit Duncan and Abel B.S. Gaiya, with contributions from Chisom Udemezue, and under the guidance of Ifeoma Malo, Clean Technology Hub. It was compiled using information from an interview with the company's founder and CEO on 21 July 2022 and a webinar held on 1 June 2022, and is intended to be used as a basis for class discussion rather than to illustrate either effective or ineffective handling of a management situation.

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Sango Technology: Preparing for Take Off

Company Background

Electric mobility is increasingly gaining popularity around the world, especially in developed countries. Hundreds of millions of dollars are being poured into the sector by large electric vehicle (EV) companies, investors and donors who want to see the sector outcompete the conventional automobile sector dependent on Internal Combustion Engines (ICE) and fossil fuels. The EV sector is slowly growing in Africa, and it is within this atmosphere that entrepreneurs like Ibok Kegbo are making efforts to create a space for themselves as African EV producers.

Ibok co-founded Sango Technology in Nigeria in 2020 in Lagos State, based on a discussion he had with his uncle and mentor. The discussion was about the uncle's logistics business and the different challenges encountered in running it, including fuel costs, vehicle repairs and challenges with delivery riders. For instance, logistics operators face the challenge of frequent breakdown of the motorcycles in their fleets, and have to spend a lot of money on repairs. The conversation then pivoted around how ideal making use of electric motorcycles would be to address some of these problems.

This led Ibok to start researching the idea. "I came home, did my research, and plugged in the numbers to try and find out if it was a good idea." He had the educational background to conceptualise the solutions: a BSc in Computer Science and an MSc in Electrical Engineering. An entrepreneurial spirit and an awareness of the potential for EVs as a solution drove him to put his education to good use. He and his business partner discovered that this was an interesting direction to take, perceiving that the logistics market seemed to be ready for it. An additional motivation for Ibok was his personal distaste for the noise made by motorbikes, especially since they often rode past the front of his house. Starting an EV company would be killing two birds with one stone.

Sango Technology's focus on electric micro-mobility emerged due to the focus on an initial target market of logistics companies in Nigeria which make use of motorcycles as delivery vehicles for parcels. The complementary focus on charging infrastructure built and operated by Sango Technology was due to the absence of general charging stations in Nigeria and the poor national electricity infrastructure which limits access to energy for households and businesses. By building its own charging station and adopting a battery swapping model, Sango Technology would be able to provide customers with both EVs and access to battery swapping facilities.

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Penetration Strategy

Vehicles are used by almost everyone for different purposes and to serve different segments of the population. Sango Technology believes that "for the adoption of a new technology, it's easier if it is driven from the point of commercial use because it meets an immediate need, it solves an important problem." These commercial customers also have a higher willingness-to-pay for the technology. in essence, this is a solution that is market demand-driven. Sango Technology therefore identifies logistics operators as a commercial sector that is among the most in need of electric mobility and the most likely to value the technology.

Through this market, the company seeks to expose the general public to electric motorbikes. Their business model is direct sales, Energy-as-a-Service (EaaS) and Software-as-a-Service (SaaS). Customers purchase electric motorcycles outrightly, but they do not own the batteries which come with the vehicles. Revenues therefore come from vehicle sales. Secondly, with the batteries that come with the vehicles, an Energy-as-a-Service model entails payment by customers at battery swapping stations for the amount of energy used, just as how vehicle owners purchase fuel at the moment. This is a reasonable arrangement given the limited availability of electricity in Nigeria and the absence of an existing EV charging infrastructure.

The third revenue stream comes from a data layer model, which allows operators to monitor and track operations. This would give logistics companies a better view of where all the electric bikes have been. An added benefit of providing this service through digital technology is that it addresses a problem often faced by logistics operators who do not know where their vehicles have been and therefore how cost-effective fuel use has been. This service would be paid for through yearly subscriptions.

In identifying penetration through a commercial niche market (logistics operators) and adopting appropriate business models, Sango Technology anticipates that other population segments would observe practical demonstrations of the utility of the technology and desire to adopt it in their own sectors as well. The economies of scale gained from producing for the logistics sector and eventually other sectors in Nigeria would provide the experience, visibility and lower costs required to bring down prices for the mass market, as well as other African markets when the company expands its operations internationally. The fact that the biggest logistics companies operating in Nigeria are multinationals also presents an opportunity for these companies to seek to replicate the success of adopting Sango Technology's vehicles across their international operations, which will aid the EV company's expansion.

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Influence of the External Environment

Sango Technology's bet on electric vehicles is not only informed by the financial opportunities that exist in the logistics industry, but also by broader trends in the Nigerian electricity market. For the company, the passage of the Nigerian Electricity Bill, 2021, which further liberalises electricity generation, transmission and distribution, including for state governments, is a great opportunity. It means that "anybody can generate electricity and… Electricity is going to be much cheaper." A comparison of price differentials reveals that electricity prices are 5-10% lower than fuel prices per battery charged. This differential is bound to increase with the removal of fuel subsidies which has artificially kept the price of fuel low for decades. In other words, there are downward cost pressures on electricity and upward cost pressures on fuel, such that the price differential could increase to close to 50%, according to Sango Technology's CEO.

However, Sango Technology is unfortunately operating in a country where commercial financing for renewable energy is inadequate, more so for nascent industries like electric mobility. Commercial banks often do not have interest in and understanding of these industries, in addition, unlike their counterparts in other renewable energy sub-sectors, international donor funding is not focused on EV startups. Access to the capital for production and business operations is even more challenging. As a result, Sango Technology rates a lack of capital as its biggest challenge. The company tried raising capital from investors, but the fledgling nature of the industry means that it is still slow to penetrate markets, and "patient capital" is hard to come by. Moreover, investors are very concerned about exchange rate risk. Investments will be made in dollars, but sales will be in naira – an arrangement which would expose foreign investors and Sango Technology to fluctuating foreign exchange rates in a country with high levels of foreign exchange volatility. According to Ibok, this "is one of the challenges with electric mobility in Nigeria, and in Africa in general." Investors were also concerned about the lack of a grid system that would charge the vehicles. Sango Technology has not received grants, but is optimistic that things will change in the near future.

Despite these limitations, Federal and State governments have unfortunately provided little succour to EV companies like Sango Technology. Unlike the mini-grid sector which benefited from persistent energy poverty, grid collapses and an industry association which advocated policy support, the EV industry is emerging when there is greater availability of public and private transport services to Nigerians compared to the availability of electricity. An Electric Car Bill was therefore quickly rejected by the Nigerian Senate in 2019. It is only as a result of the fiscal crisis caused by massive fuel subsidies and more frequent fuel scarcities that an environment more encouraging of EVs is gradually emerging, as Sango Technolog y has

already observed. The company is now in communication with the Lagos State Ministry of Transportation and the ministry is waiting for Sango Technology to return with a demonstration project and express willingness to provide support through policymaking.

Although Sango Technology has not begun production yet, it anticipates that if there are supply chain challenges, it would probably be issues of logistics, especially when it comes to moving batteries. For instance, if working with batteries that are classified as dangerous goods – which means they could catch fire – there are risks involved in importing them from China.

Another issue to address in the Nigerian market is that of a skilled workforce. A big challenge when it comes to Research and Development (R&D) is that there is a significant brain drain across the sciences. "All the good guys are leaving. There are those that are technically sound, but it is difficult to find them." The key challenges are, therefore, "how do you find people that are really good? And how do you keep the good ones from leaving the country?" Sango Technology has taken the approach of looking for people who are really invested as demonstrated by the projects they have undertaken – such as designing a system from scratch –, rather than their possession of an engineering degree.

The EV industry requires the development of industry-specific skills which workers need to learn by doing on-the-job. Sango Technology has spoken to the Industrial Training Fund at Ojota, Lagos (with a "handshake agreement") in order to train interns from there when production begins. The internship partnership may extend to other interested institutions. This would provide opportunities for trainees to learn about EV technology through hands-on practical experience to understand the assembly process and the dynamics of the system. Trainees may then go out to build their own EVs and apply their skills elsewhere. Sango Technology would also benefit from the labour provided by these trainees.

These challenges have not stopped Sango Technology. In identifying a commercial niche market within Nigeria's commercial capital city to penetrate into, it circumvents the challenge of electric mobility being too unknown, untested or expensive for the mass consumer market. In adopting a battery swapping business model, it addresses the challenge of a lack of electricity and widely available charging infrastructure in Nigeria. The company has therefore secured a Memorandum of Understanding (MoU) with a logistics firm which is waiting for the delivery of a prototype, and is in discussions with other logistics companies. In addition to the expectation of a widening cost differential between fuels and electricity, as well as increased global funding for the e-mobility sector, and the potential rise in government support, Sango Technology is positioned to grow over the next few years.

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Reflection

1. What are the limitations of Sango Technology's market penetration strategy?

2. What opportunities can Sango Technology take advantage of as a startup company in a fledgling industry?