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Huawei Technologies' imprint in African Global Cities

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by

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Executive Summary

This bachelor thesis investigates the operational strategy of *Huawei Technologies Inc*, the B2B telecommunication equipment business unit at *Huawei*, in the context of internationalization towards Africa. The objective of this paper is to understand what factors have led a Chinese multinational company, in the space of two decades, into the dominant position they enjoy today, with reportedly 70% of market share in the telecommunication equipment line of business in Africa.

Through research, it quickly became clear that *Huawei* was targeting specific and strategic areas to install their offices. These areas share common characteristics such as geographical strategic location, urban intensive development and have inherent international natures. These cities, based on their common characteristics have been studied for decades by various historians, sociologists, and economists. They have all contributed in shaping the concept of global city as they uncovered the intertwined network linking these cities to one another across the globe. Three cities across the entire African continent qualify today as global cities: Johannesburg, Cairo, and Casablanca.

Interestingly enough, *Huawei* operations in these markets have been far from anecdotal with state-of-the-art facilities and plenty of CSR initiatives to lift the communities and build relationships for the future. These three ecosystems have been remarkably fertile for *Huawei* who seems to have understood the complexities of each and managed to navigate with superior ability to their competitors.

The factors of such success can be credited to *Huawei* and their agile nature, with special attention towards customer-centricity, innovation, and training. But we cannot hide from the fact that China has been extremely active on the African continent these past decades which surely played a role in *Huawei*'s penetration success in such diverse markets.

Through primary data collection, I was able to bring a unique and practical perspective to this paper. This dimension sets my research apart from what has been previously done on the topic. The sole focus on African global cities is also a choice that makes my paper standout from the crowd. It is important to note that this thesis is mainly composed of qualitative data as the topic simply does not call for figures. This thesis is all about navigating through fiction and reality whilst comparing divergent views in an effort to extract the most valuable pertinent analysis possible.

Based on the research conducted, I believe *Huawei* should pursue the leveraging of the knowledge they acquired by working in extremely diverse markets and create knowledge centres, essentially training facilities, to further exploit their competitive advantage as a global service provider. This would enable them to consolidate their relationships within the markets whilst encouraging creative ideas to bolster innovation. But these practices can only be successful if they manage to keep their stakeholders onboard which essentially means they must double up their efforts to appeal through communication, transparency and show an open face to avoid trust from vanishing with the negative claims attacking the firm's business integrity.

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1. Introduction

As the world becomes more digitalized by the day, as connectivity grows ever faster worldwide, China has progressively emerged as a prominent actor in providing solutions to answer to the ever-growing needs of the world population in the field of ICT. Through sound internationalization, they have taken up the role of providing that connectivity across the African continent. Telecommunication companies like *Huawei Technologies* have played a pivotal role in the transition towards a more connected future. With around 70% of market share in networking facilities in Africa, they have emerged as a providential service provider where others were simply not up to speed. This rapid transition has enabled Africa, through its global cities, to get another chance at globalization and an opportunity to break the last standing barriers for development.

Though, from such notable exposure may arise question marks regarding safety, data protection, or even sovereignty among other elements. And with the implementation of 5G across the globe, those questions are timely, to say the least. As it is a contemporary theme, with China recently launching a probe satellite to provide 6G (BBC, 2020), it is now the appropriate time to assess the situation at hand and allow collective reflection to rise to the surface. This thesis' objective is to build an understanding of the dynamic forces surrounding the telecommunication sector in fast-growing African cities, especially through *Huawei*'s operations, which may well explain other comparable phenomena rooted deep inside the fruitful commercial relationships established between China and the African continent over the years.

More precisely, this thesis investigates and explores *Huawei'*s involvement in African global cities from a practical standpoint, through research and interviews with *Huawei* representatives as well as a telecommunication infrastructure expert. This primary data collection allowed me to extract what factors came into play in the firm's internationalization strategy and what contributed to its apparent success in such fast-moving and diverse ecosystems. From these findings, I was able to understand the opportunities and the threats that may arise in the mid-to-long-term horizon for the targeted regions and Africa as a whole.

In this thesis, you will first get an understanding of the context surrounding the topic of choice, getting a first feel of what *Huawei Technologies Co. Ltd.* is about, and a brief overview of the African business landscape. You shall then be exposes to the central research question of this thesis as well as the methodology applied to answer the research question as best as possible with the resources at my disposal. The

fundamentals of global cities will then be introduced, from the origins of the concept to how it is studied today, with a special focus on the current African players, namely three which are Johannesburg, Cairo, and Casablanca. The following section will discuss the results of the research as well as the interview results and thorough analysis with again the aim to find the best possible answer to our research question. The thesis will end with a conclusion of my findings as well as a set of recommendations to *Huawei* and a brief exposure to the limitations encountered during the elaboration of this thesis before assessing the potential for further research.

This thesis could serve *Huawei* well in their quest to improve their communication. Through this thesis' efforts to shed light on certain grey areas, they could take the opportunity to get inspired and better understand the outside world's perception of their activities on the African continent. This thesis could also help *Huawei*'s stakeholders better assess what they are buying into as this paper's mainspring is to bring information back to the surface and depict *Huawei*'s internationalization strategy in the African context as clearly as possible. As for the public, they simply do not appreciate the magnitude of the issue at hand. And in face of the unknown, of what we cannot understand, we will likely manifest fear and restraint which shows just how critical it is to get more familiar with this topic to shape one's own opinion before trusting blindly media outlets and news stories.

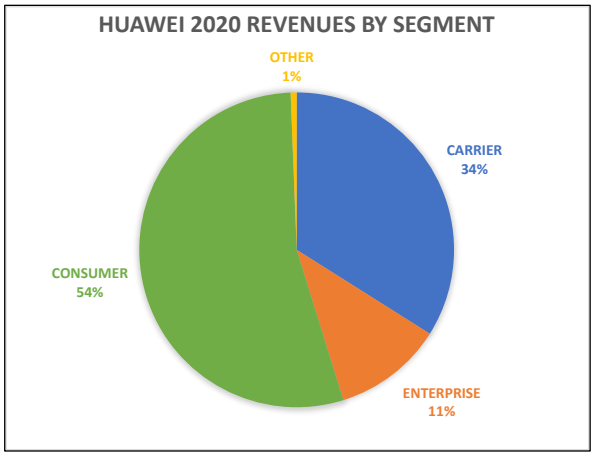
2. Context

2.1 Huawei Technologies Co. Ltd.

"*China is rising and taking action*", the name *Huawei* says it all. *Huawei Technologies Co. Ltd.* was founded in 1987 in an apartment in Shenzhen, China, by ex-military officer Rhen Zhengfei. First acting as an equipment reseller, the private company gradually shifted ownership to its employees, a singular matter in China back then, as business started picking up. Over the years, *Huawei* has enjoyed a destiny very few in China could have ever imagined, especially at the time. Their stratospheric rise to the top of the food chain is nothing short of exemplary, especially when you consider the hurdles they had to face along the way.

It is essential to make clear that *Huawei* is comprised of different business units as they serve 3 types of markets. Telecom operators, such as *Vodafone*, *British Telecom*, *Verizon*, with telecommunication equipment to provide internet, broadband, wireless, plus fixed, and mobile phone services. Their other B2B sector caters for specific needs of enterprises, organizations, institutions, governments such as cloud solutions. Their third segment is their B2C activity through which they sell smartphones, smartwatches, laptops, and other devices for mass-market consumption.

Figure 1 - Huawei Revenues by Segment, 2020



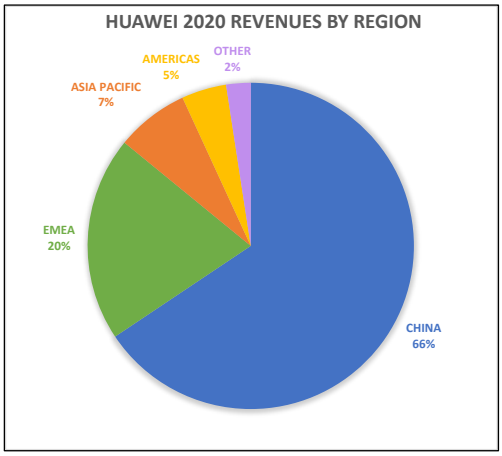
Source: Huawei 2020 Annual Report, page 17

Today, *Huawei's* 197'000 employees worldwide have managed to generate US$140B in revenues through their diversified activities, (from ICT infrastructure to consumer smartphones) eclipsing most of its American and European counterparts. They rank as the number one most valuable and strongest telecom infrastructure brand in the world according to *Brand Finance*'s annual report released in February 2021. They are ahead of the likes of *Cisco* (US), *Nokia* (FI), *ZTE* (CN), and *Ericsson* (SE) (Brandirectory,

2021:21). According to the *Fortune Global 500* list of technology sector companies in 2020, *Huawei* ranks 6th just behind *Microsoft* (US) and ahead of *Dell* (US), *Hitachi* (JP), *IBM* (US), and *Sony* (JP) among others (Global 500, 2020).

With a presence in over 170 countries, *Huawei* has become the world's largest supplier of telecommunication equipment as well as the second largest smartphone manufacturer behind South Korean tech giant *Samsung*.

Figure 2 - Huawei Revenues by Region, 2020



Source: Huawei 2020 Annual Report, page 17

Figure 3 - Telecom Infrastructure Brand Rankings by Brand Finance®

Source: Telecoms 150 2021 Annual Report, page 21

2.1.1 Credit Where Credit is Due

Part of *Huawei*'s success over the years can be attributed to their relentless innovation efforts from day one. Interestingly, *Huawei* is one of the world's largest investors in R&D. They invested US $15 billion in R&D in alone 2018 and are planning to invest an additional $100 billion over the next five years according to their website (Huawei, 2021).

But the first contributing factor to their success is undoubtedly China's economic reforms led by Deng Xiaoping's government, which saw the Middle Kingdom morph from a planned economy towards a planned commodity economy, then to a commodity economy, and finally to a market economy. Without these reforms, *Huawei* would simply not exist. They allowed entrepreneurs to create their businesses, among other easing measures. With reportedly no ties with the government, this represented the opportunity of a lifetime for Ren Zhengfei.

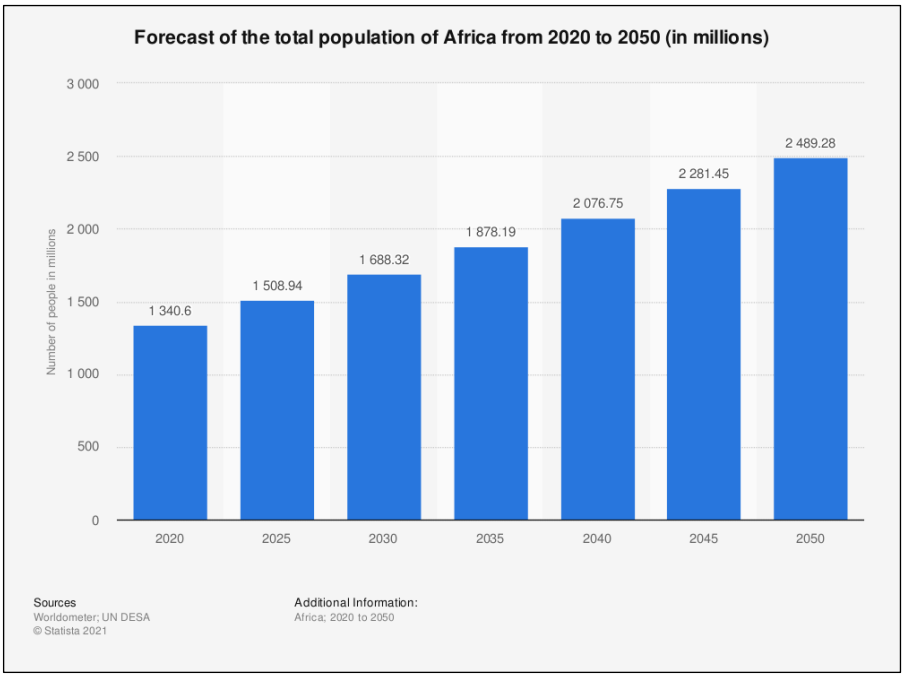
The telecommunication market was already open to foreign companies by the time *Huawei* became a telecommunication equipment provider, which meant most populated areas were already served by bigger and better international competitors. *Huawei*, therefore had to learn their trade somehow and served parts of rural China first, which were markets deemed unattractive to the likes of *Nokia*, *Ericsson*, and *Lucent Technologies* (Tao & Chunbo, 2015).

This know-how certainly came in handy when they decided to go international and serve customers overseas. They began to do business where no competitors saw potential, namely in African countries where they have enjoyed tremendous success over the years.

2.2 Africa – The Last Frontier

The African continent considered the final frontier of 21st century global growth is gradually shifting towards better opportunities. Rapid urbanization, infrastructure development, improving manufacturing output, higher connectivity and increasing demographics can all be signs of an ascending continent if managed properly, contributing to a more fruitful future. The trends at the continent level show interesting advancements and testify of a dynamic environment full of promise and potential.

Figure 4 - Forecast of total African population growth from 2020 to 2050

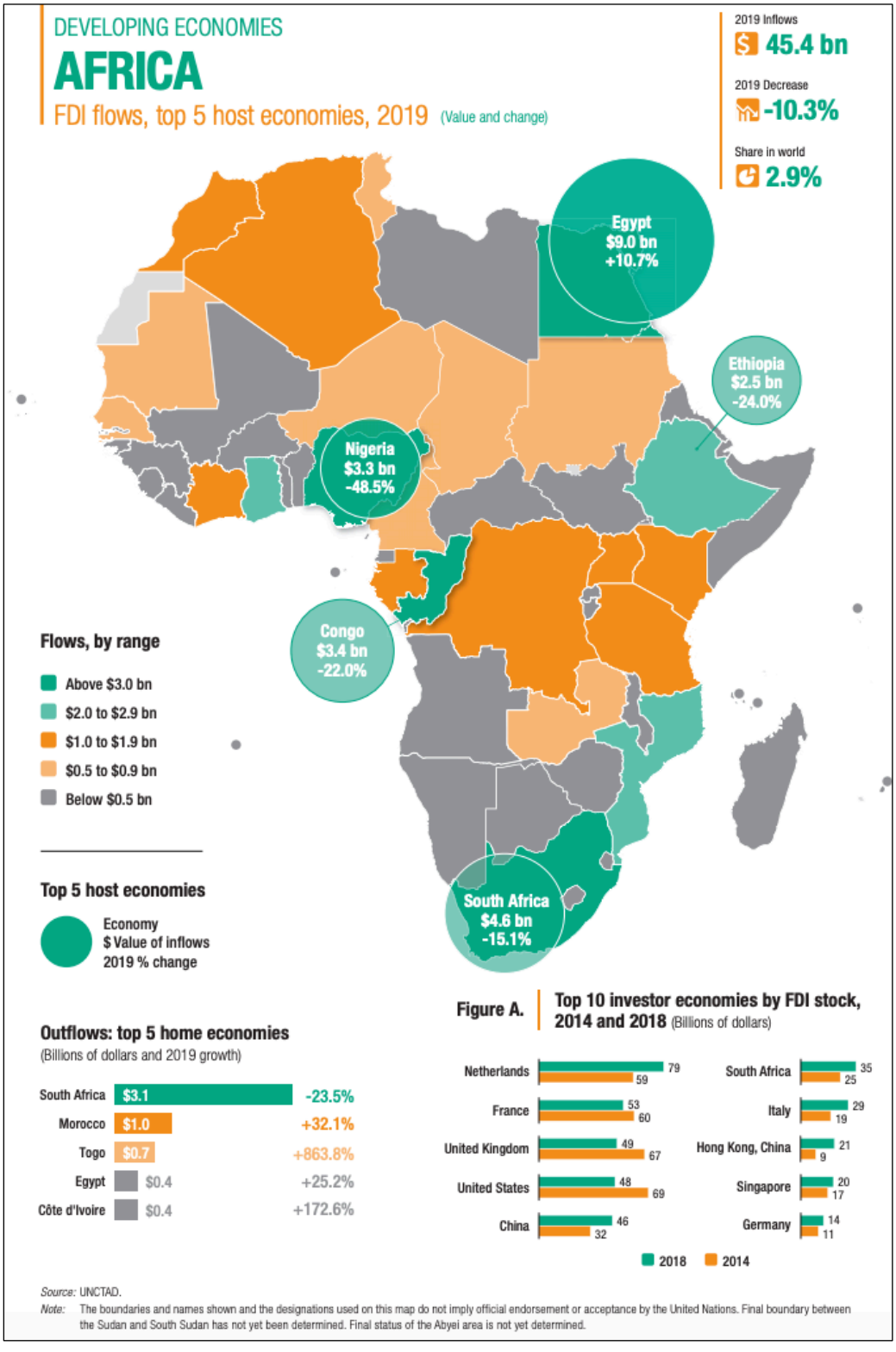


Source: Worldometer, UN DESA

Many have shown faith and commitment to Africa's development endeavours as the figures of the World Investment Report by *UNCTAD* suggest (UNCTAD, 2020:28). African FDI inflows were fuelled by the Netherlands, France, UK all for historical reasons, followed by the US, China, South Africa, Italy, Hong Kong, Singapore, and Germany. A notable candidate, based on its emerging status, is China whose influence in Africa has been steadily growing. The People's Republic of China has been financially engaged on African soil since the early 2000s as they had already understood some 20 years ago what strategic importance investing in Africa could hold. It is believed that US$153 billion have been loaned out so far and this figure is likely to increase in the years to come following China's new Belt & Road Initiative and the development of inland China.

Other notable investors include institutions such as the *International Finance Corporation (IFC)*, a sister organization to the *World Bank*, which has financed many businesses and projects in Africa. They claim on their website that over the last 50 years, they have invested over U$25 billion in African businesses and financial institutions with a current portfolio valued at $5 billion.

Figure 5 - Africa Foreign Direct Investments



Source: UNCTAD, World Investment Report 2020, page 28

2.2.1 Multi Speed Africa

The generalized narrative of “Africa rising” as one has been thrown around aimlessly these past decades, possibly in the hopes of a self-fulfilling prophecy. But we all understand that it does not paint the picture of what is a very different reality (KPMG, 2018). Some countries, regions, and cities have shown varying growth patterns, some developing at a blistering pace, and some still very much struggling. It is today more difficult than ever to compare the likes of Nigeria and Egypt to Mozambique and Sudan.

Regions with economic promise have been quick to develop to welcome much-needed investment from local and international businesses. These regions, mainly concentrated around the coasts are becoming in their own rights serious economic hubs for the African continent, acting as entrance and exit ways for movement of goods, movement of people, and ultimately movement of capital. These hubs have shown such potential that entire population subsets from rural Africa saw fit to move closer to these dynamic environments creating large population movements across Africa. These movements contributed to the rapid urbanization of these hubs which fast became dense urban landscapes; cities with abundant life, congested centres, and expansive agglomerations.

The economic might of those cities, though plagued with inequalities, still attracted many businesses and investments from around the world, with some acquiring the label/status of global city. The denomination “global city” is based on a set of quantitative and qualitative criteria which will be touched up in the “Conceptual Approach” section of this paper.

3. Central Research Question

This thesis investigates *Huawei Technologies*' imprint in African global cities. The objective is to first uncover what triggered *Huawei*'s decision to establish itself in African global cities. This will enable us to discover just how important they have managed to become in those specific regions and what risks and opportunities their presence represents in those ecosystems.

All in all, based on their omnipresence worldwide and their dominant position in the African landscape, understanding the contributing factors to both their presence and success in the given landscape of African global cities; Johannesburg, Cairo, and Casablanca, could allow us to better appreciate *Huawei*'s internationalization strategy as well as the forces at play.

4. Research Methodology

4.1 Conceptual approach

The conceptual approach is mainly focused on the notion of global cities which was made possible by the academic papers and scientific reviews/articles as well as book extracts of scholars such as Saskia Sassen and Peter J. Taylor, both great contributors to what is referred to today as global cities. To help grasp the challenges and opportunities emanating from *Huawei*'s presence in global African cities, I considered the three African global cities based on the latest *GaWC* ratings. The sociological, geographical, and overall strategical situation makes global cities (based on *GAWC* rankings) especially interesting to target, especially when you consider their growth potential. Institutional web pages, news articles, and other website were used to get a base understanding of the characteristics as well as the strengths and weaknesses of these cities.

Economics of infrastructure, including telecommunication, also had to be explored. Though telecommunication may sound trivial in developed economies, emerging economies have increasing needs for a push in the right direction towards connectivity. The field of economic international relations also had to be probed to explain the ties between the African continent and China. The shift of economic powers from *OECD* countries to emerging economies makes it a particularly interesting topic which may well help explain *Huawei*'s penetration in the African market and the success they have enjoyed so far. Various literature sources on the topics of the economics of infrastructure and Chinese geopolitics with respect to Africa have helped bridge the knowledge gap in this report.

4.2 Empirical approach

My empirical analysis consisted of compiling results of the reality of *Huawei*'s operations in Johannesburg, Cairo, and Casablanca. Real-life data such as studies and scientific articles have nourished my empirical analysis to great lengths providing solid grounds for reflexion and analysis. But the main source of data came from the two interviews I conducted which allowed me to bring a professional dimension to the research. The analysis of these interviews has helped consolidate the knowledge base readily available online and quickly became food for further reflexion.

Based on the nature of my topic, there has been a strong incline towards qualitative data as the quantitative aspect is hardly available and would not add great value to the discussion.

4.2.1 Quantitative method

From a quantitative standpoint, national data, as well as secondary data readily available (*Huawei* disclosed data for example), have served as valuable measures. *Globalization and World Cities Research Network* also represented a solid pool of data. Based on the opaque nature of Chinese FDIs in general, I still had to challenge that data and have therefore also used studies, such as the ones conducted by the *China-Africa Research Initiative* at *John Hopkins School of Advanced International Studies* which have been active for decades in shedding light on the relationship between the African continent and China.

4.2.2 Qualitative method

From a qualitative standpoint, I focused on gathering and compiling relevant information from respected news outlets, university studies, reports, and papers. I also conducting two interviews which I have analysed in the “Discussion of the Factors at Play” section to help further build this critical part of my paper. The primary data extracted has been of great value for further discussion as well as structuring the thesis.

5. Conceptual Approach

5.1 Global City

The concept of "*world city*" owes its existence to historians who first studied the effects of European colonization and the development of trading ports and emporia on modern society. Cities have always been fascinating grounds of study for human interaction, societal behaviour, economic flows, and governance among many other disciplines.

Fernand Braudel back in the mid-1900's probed the idea with the first take on this concept, defining it as a location where the information, goods, capitals, credits, men, orders, commerce come and go in abundance. Immanuel Wallerstein, a sociologist by trade, built upon Braudel's vision and was first to study the concept from a sociology point of view before other scholars elaborated it further as the century drew to a close.

5.1.1 Saskia Sassen and Global City Research by Sociologists

The concept of "*global city*", an updated version of the "*world city*", was picked up by urban planners Friedmann & Wolff (Friedmann & Wolff, 1982) who both understood that several capital-saturated urban regions were gradually forming global networks and had expansionary tendencies.

A few years later, a sociologist by the name of Saskia Sassen suggested a more elaborate and up-to-date proposition (1991).

She first described the global city as a dense urban cluster characterized by more than simply its resources, labour, capital, goods, and technology. The focal point of those cities is their global integration through a worldwide dematerialized and digitalized mesh.

Those cities concentrate key players from the international private sector and foster invaluable diversity in the people and organizations they are comprised of.

The elements listed above make global cities economic, cultural, political, and social poles like no other on Earth. The geo-economic strategic nature of these cities lies in the fact they are both localized and strongly embedded in their respective regions, and highly connected to the outside world. The networks they are part of enables them to benefit from existing bridges and elevate themselves to trans-national roles which only governments could achieve in the past. This cross-border status is exacerbated by the increasing density, pace, ease, and diversity of transactions within those networks and the actors they hold as geographic proximity is not a decisive factor anymore.

Sassen also emphasizes on the growing cleavage between society and the nation-state. She considers those global cities as vectors of globalization and digitalization which have brought with them an: *"unbundling of the exclusive authority over territory and people retained by the nation-state"*.

Non-governmental organisations, multinational companies, and immigrants are among those stripping power from the government as they bypass the then suffocating grip of the state over cross-border / inter-state affairs. Let us not forget that where one loses power, the other one gains, and the famous phrase: *"With great power comes great responsibility"* applies brilliantly in this context. Sassen talks about the proliferation of a new kind of transnational politics in the hands of those non-state actors which emphasises their predominant role in the globalization race (Sassen, 2007).

5.1.2 Peter J. Taylor and Global City Research by Geographers

Fast forward to 2000, Peter J. Taylor, a then geographer at *Loughborough University* with a geopolitics background offers his take on the world city terminology and pushes the concept one step further.

Where his predecessors' (including Sassen) interpretation of global cities were based on qualitative and subjective criteria, Taylor wanted to bring a more rational and standardized approach with the aim of studying them further and compare them with one another.

First, he places multinational corporations at centre stage, defining them as the main driving force in the elaboration and sustenance of those networks. It is the behaviour of those firms across and within cities that consolidates those networks. But not just any firms; "*advanced producer services*", firms that provide insurance, finance, marketing, law, accounting at the international level. In his piece "*Specification of the World City Network*" he develops that:

> *"In order to carry out their business they seek out knowledge-rich environments, world cities, in which they can prosper. The success of each firm is dependent upon their location strategies of having offices in selected world cities. These are the office networks of firms through which they provide their global service. The ideal is to be able to produce a seamless service for every client whatever the locational scale and complexity of a given project."* *(Taylor, 2001)*

Focusing on these networks, he defines them as layered. The first layer is the world economy itself acting as the base frame. The second layer is comprised of the world cities, defined as "*knowledge constellations for production of services*". The third layer is composed of those advanced producer services, which are pivotal to the expansion of

those networks worldwide. And based on those layers, he argues that a quantitative approach is feasible and even necessary to push the discussion further. He demonstrates that by using hard data such as advanced producer services presence, size of their offices, presence of affiliates and MNCs subsidiaries, we could understand better, based on evidence, those networks and start a conversation of comparisons.

5.1.3 Globalization and World Cities (GaWC) Research Group

Two years before the publication of his paper: "*Specification of the World City Network*", Peter J. Taylor founded the Globalization and World Cities (GaWC) Research Group in an effort to study and gather data on the linkages between cities in light of globalization.

As described in the previous section, the driving forces of these global networks are the advanced producer services' presence and involvement. He, therefore, designed a grading system for cities, from Alpha ++ to Gamma -, based on the advanced producer services' overall global strategy. But how to select and gather the appropriate data to allow them to assess those advanced producer services' global strategy?

In 2001, Taylor and Catalano described in their joint paper "*Measurement of the World City Network*" that they first selected a handful of advanced producer services operating on a global pursuit with localized attributes (being able to answer to local needs/requirements whilst ensuring a global presence), that is based on a set criterion:

> *"A firm is deemed to be pursuing a global locational strategy when it has offices in at least 15 different cities including one or more cities in each of the prime globalization arenas: northern America, western Europe, and Pacific Asia." (Taylor & Catalano, 2001:2)*

Those advanced producer services were composed of 10 to 20 firms in each of the listed fields below ("*the GaWC 100*"), which fit the previous criterion:

- Accountancy, with the likes of *EY*, *KPMG,* and *PwC* among others
- Advertising, with the likes of *Hakuhodo*, *Dentsu,* and *Ogilvy* among others
- Banking/Finance, with the likes of *UBS*, *JP Morgan,* and *Deutsche Bank* among others
- Insurance, with the likes of *Allianz Group*, *Prudential,* and *Lloyd's* among others
- Law, with the likes of *Baker & McKenzie*, *Latham & Watkins,* and *Morgan Lewis* among others

- Management Consultancy, with the likes of *IBM*, *BCG*, and *McKinsey* among others (GaWC, 2021)

After having carefully selected the desired firms, they created a 6-point grading scale to assess a service value (correlated to the strategic importance) according to the firms' presence in the cities of interest which reads as follows:

- 0 = no presence in the city
- 1 = no office but evidence of some activity (e.g. association, agent for claims)
- 2 = basic office provision in the city (a firm's 'normal' city provision)
- 3 = additional office provision (e.g. large size of office, large number of offices)
- 4 = major office provision (this is usually indicated by extra-locational responsibilities of an office)
- 5 = outstanding office provision (usually HQ plus very important regional and functional centres)

Finally, the cities to be studied remained the last piece of the puzzle. The selection process for these was as follows:

> *"The final selection of cities is based upon previous experiments and includes the capital cities of all but the smallest states plus numerous other cities of economic importance. The resulting set consists of 316 cities." (Taylor & Catalano, 2001:3)*

Taylor and Catalano described in relative detail their ways and means of measurement and acknowledged the challenges in the data collection process, whether it is incomplete or fragmented data sources, differing nomenclatures, data variety, subjectivity, corporate opacity, a process they even called scavenging. And these challenges questioned the GaWC's findings' credibility and accuracy. Those allegations were swooped by Taylor and Catalano, who believed in the statistic depth of the sample to self-correct any blatant inaccuracy.

Today, the latest GaWC listing (The World According to GaWC 2020) is based on the international presence of 175 leading advanced producer service firms across 707 cities worldwide (GaWC, 2020).

5.1.3.1 The World According to GaWC

The cities on the list, according to GaWC, are ecosystems that have realized or are yet to realize their potential as global interconnected actors from a socio-economic

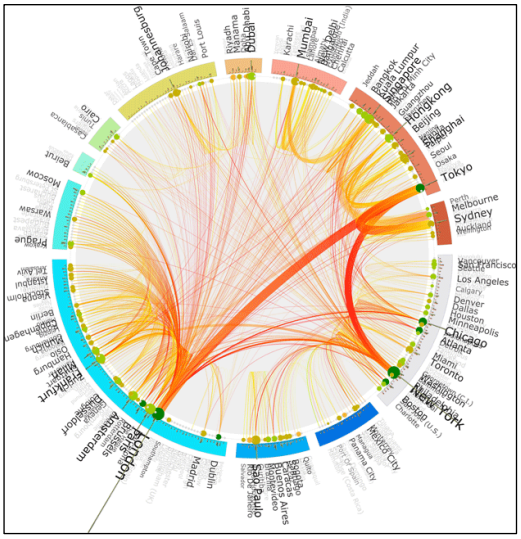
standpoint. This potential is measured by their intrinsic attractiveness to advanced producer services (APS) who thrive on building complex worldwide networks.

The grades attributed by GaWC to the list of cities reads as follows:

- **Alpha++ cities**: In all analyses, London and New York stand out as clearly more integrated than all other cities and constitute their own high level of integration
- **Alpha+ cities**: Other highly integrated cities that complement London and New York, largely filling in advanced service needs for Pacific Asia
- **Alpha** & **Alpha- cities**: Very important world cities that link major economic regions and states into the world economy
- All **Beta level cities**: These are important world cities that are instrumental in linking their region or state into the world economy
- All **Gamma level cities**: These can be world cities linking smaller regions or states into the world economy, or important world cities whose major global capacity is not in advanced producer services
- **Cities with a sufficiency of services**: These are cities that are not world cities as defined here but they have sufficient services so as not to be overly dependent on world cities. Two specialised categories of city are common at this level of integration: smaller capital cities, and traditional centres of manufacturing regions (GaWC, 2021)

The usual suspects, London and New York are in a league of their own and top the list as Alpha ++ followed by the likes of Hong Kong, Singapore, Shanghai, Paris, and Tokyo as Alpha +. Unsurprisingly, the vast majority of global cities are located in the developed Northern hemisphere with seemingly few examples in developing countries. Yet, interestingly enough, we can still observe the emergence of cities that a non-informed public wouldn't even consider. The likes of Riyadh, Manila, Bangalore, and Johannesburg are all part of the Alpha - and should play an integral part of the discussion in their own right.

Figure 6 - Chord Diagram of Global Cities' Networks



Source: GAWC Research Bulletin 421, Figure 1c

I have taken the liberty to highlight Johannesburg as it has especially interesting characteristics. It is notably the first African ambassador on the list and one of three significant African global cities according to GaWC; Johannesburg as Alpha -, Cairo as Beta + and Casablanca as Beta with Nigeria's economic pulse Lagos and the Algerian capital falling behind with lower ratings.

These economic hubs which are today's stem cells of Africa could well grow into regional organs pumping life into the continent, from North to South, East to West. That is why I have elected to study my research question in the context of African global cities.

5.1.3.2 Johannesburg

Johannesburg, the most populated city in South Africa, was founded in 1886, following the discovery of gold, which makes it one of the youngest global cities. The city counts a population of 950'000 and if we include the urban agglomeration population, this figure rises to about 6 million.

Plagued with inequality, driven by the South African apartheid, the city is made of extraordinary contrast. The large skyscrapers of the financial district challenge the acres of townships of the agglomeration.

Nonetheless, it remains a city of remarkable economic might, benefitting from strong mining and manufacturing sectors as well as a powerful financial sector with at its heart the JSE, the Johannesburg Stock Exchange whose market capitalization or the total value of all securities traded is $1.13 trillion (JSE, 2021). According to the city's website,

Johannesburg generates 16 percent of South Africa's GDP (City of Johannesburg, 2021) which amounts to around $56B generated per year.

The quality of infrastructure and economic prosperity has led the likes of *EY*, *Ogilvy*, *UBS*, *Allianz Group*, *Baker & McKenzie*, and *IBM* to have branches, offices, and regional head offices there. That is also a reason why this city has reached such a status in only a few decades.

5.1.3.3 Cairo

The 5000-year-old metropolis, the Egyptian capital, home to the famous Giza pyramids is the 6th most populated city in the world with 21 million inhabitants if we include the urban agglomeration population (Macrotrends, 2021). The blend of ancient and new makes for a unique urban environment.

Cairo's fast-paced growth came after King Farouk I's abdication which saw the country shift from monarchy to republic in the early 1950s. With today an estimated more than two-thirds of the country's gross national product coming from the metropolitan area (New Market Services, 2021, the city is considered the economic and industrial beating heart of Egypt.

It is known for its automobile manufacturing and assembly, with the likes of *Daimler*, *Volvo*, *Suzuki,* and *Hyundai* all electing Egyptian assembly lines. The city and country also attract tourism from every continent which represents a strong source of income for Cairo.

Trends in recent years are also showing a gradual liberalization of key sectors after their Open-Door Policy (Wikipedia, 2021) in the 1970s such as finance and insurance, which is still composed of strong state-owned actors for example *National Bank of Egypt* (Egyptian Central Bank, 2021). The Egyptian Exchange (EGX) based in Cairo has a market capitalization of around $40B (EGX, 2021). Another notable sector to be liberalized is the Information and Communication Technologies sector which has been up for grabs and booming in the last 15 years.

5.1.3.4 Casablanca

Made world famous with the Hollywood romance starring Humphrey Bogart and Ingrid Bergman, the Moroccan port city is the largest city of the Kingdom. With 4.2 million inhabitants and a predicted to grow significantly in the years to come, the city is currently the second largest in the Maghreb region.

Under the French protectorate, the city saw its urban centre develop into state-of-the-art infrastructure inspired by European standards at the time (City of Casablanca, 2021). This growth inspired many Europeans and Moroccans from all walks of life to ride the wave and exploit the city's potential, especially after Morocco's independence in 1956 (Wikipedia, 2021).

Known for its busy port, Casablanca has become Morocco's economic crown jewel, an economic powerhouse. The noisy neighbour Tangier is also immensely important for the Moroccan economy. Casablanca's industry is strong, with exports making for significant financial inflows to the region and nation. Phosphate, building materials, glass, textiles, electronics, processed food are among the most important industries in the region.

The dynamic and international nature of the city has made it a prime location for offices and regional headquarters in Northern Africa, with *PwC* (PwC, 2021), *McKinsey & Company* (McKinsey & Company, 2021), *Citibank*, *KPMG*, *Bosch,* and *MSC* (MSC, 2021) all establishing themselves through at least regional branches.

5.1.4 Advanced Producer Services

To serve as a refresher, the advanced producer services are composed of 10 to 20 firms in each of the listed fields below ("*the GaWC 100*"), which fit the previous criterion:

- Accountancy, with the likes of *EY*, *KPMG*, and *PwC* among others
- Advertising, with the likes of *Hakuhodo*, *Dentsu*, and *Ogilvy* among others
- Banking/Finance, with the likes of *UBS*, *JP Morgan*, and *Deutsche Bank* among others
- Insurance, with the likes of *Allianz Group*, *Prudential*, and *Lloyd's* among others
- Law, with the likes of *Baker & McKenzie*, *Latham & Watkins*, and *Morgan Lewis* among others
- Management Consultancy, with the likes of *IBM*, *BCG*, and *McKinsey* among others (GaWC, 2021)

These advanced producer services play a key role in shaping the entrepreneurial eco-systems and socio-economic fabric of global cities. To further nourish the reflexion, we still face a chicken or egg causality dilemma. Which came first, the APS or the infrastructures necessary for the APS to be operational? It remains unclear whether the APS paves the way for infrastructure or the opposite. If we stay pragmatic, we can

consider that these specialized firms have needs to operate effectively which can be fulfilled at both government level, for example through the creation of Special Economic Zones which favour companies through commercial incentives or at the private level, for example by contracting a mandating and infrastructure services company to improve their facilities.

The APS's only way to thrive is to operate within a ripe environment with above basic infrastructures favouring high-level and high-quality service delivery throughout the world. That is where the second line of services comes in. Those active in construction, infrastructure, education, health care, information, and communication technologies (ICT), human resources have their work cut out to improve the cities' ecosystems and enable businesses to thrive on a local, regional, national and international scale, thanks to the APS's. By working hand in hand with the APS in a symbiotic fashion, the other service providers mentioned above manage to achieve suitable and adequate levels of infrastructure for the communities' and businesses' benefits.

As the APS gradually flood new locations and markets, the need for world-class infrastructure is more and more pressing. Thus, the pressure is grand on governmental and regional authorities to deliver quality infrastructure to attract and retain multinational companies and consequently the service providers these MNCs need to operate efficiently. Infrastructures like energy, transportation, ICT, public administration are all critical elements to ensure a functioning and well-connected network at a regional, national, and international scale.

5.2 Telecommunication Infrastructure

5.2.1 Definition

According to the *Digital Watch observatory*, based in Geneva, telecommunication infrastructure is:

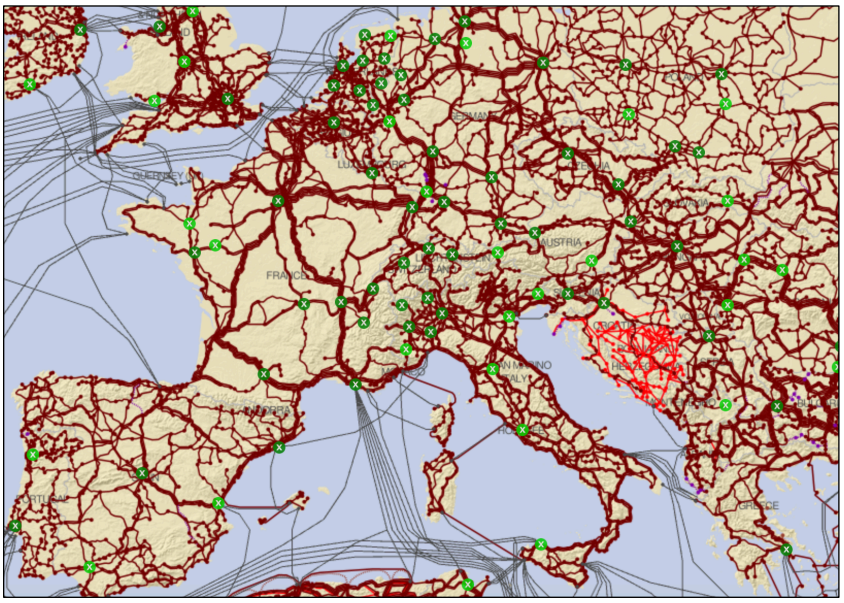
> *"a physical medium through which all Internet traffic flows. This includes telephone wires, cables (including submarine cables), satellites, microwaves, and mobile technology such as fifth-generation (5G) mobile networks." (GIP Digital Watch, 2021)*

Those infrastructures are namely regulated at the macro-level by two organizations. The *International Telecommunication Union (ITU)* oversees the technical aspect by ensuring proper implementation of tasks such as management of satellite positioning and by issuing rules for coordination between national telecommunications systems. The *World*

Trade Organization (WTO) takes care of the commercial aspect through general market rules to ensure smooth liberalization by fostering market access and competition.

These infrastructures are usually shared amongst the various telecommunication service providers (ex: *Vodafone*, *AT&T*, *Bouygues*, *Swisscom*) which enables them to enjoy economies of scale and share the costs among each other. The contributions paid by these telecommunication agencies are then charged to end clients with a premium on their various packages.

Figure 7 - Broadband Network in Europe



Source: ITU, Broadband Map

To provide you with a visual representation of the vascular nature of those infrastructures, you can see on Figure 7 the broadband map of Europe which will help you to benchmark with the following sections. For context, broadband functions like a six-lane highway, transporting large volumes of data at high speeds.

Figure 8 - Composition of Infrastructure Stocks Evolution, World

In per cent

	1960	1970	1980	1990	2000	2010
Electricity	22	32	40	43	44	42
Roads	47	46	45	44	44	43
Rail	29	19	13	9	6	5
Telecom	2	3	3	4	6	10
Total	**100**	**100**	**100**	**100**	**100**	**100**

Note: Water and sanitation excluded as lack of historical data.
Source: Marianne Fay, Tito Yepes, *Investing in Infrastructure, What is Needed from 2000 to 2010?,* Policy Research Working Paper 3 102, The World Bank, Infrastructure Vice Presidency, July 2003.

Source: OECD, Infrastructure to 2030: Telecom, Land Transport, Water and Electricity, page 86

Telecommunication infrastructure has been growing in importance in terms of government spending. As we turn towards an information society, with technology at the heart of everything we do, and the Internet of Things buzzword gaining in credibility, this translates into a higher share of investment by governments worldwide according to the *OECD* (OECD: 2006:86).

5.2.2 Global Connectivity Index

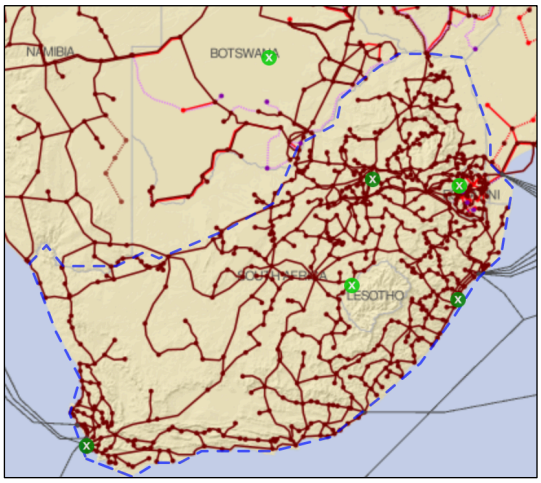
The Global Connectivity Index is an assessment tool created by *Huawei* to quantify and compare the ICT and digital landscape of each country, with the objective to rank countries and elaborate a set of recommendations for further improvements. Based on the immense amounts of data available at their fingertips, the index can be a reliable indicator of the maturity of those markets and can build the grounds for further reflection. This metric was created in 2014 and considers 40 ICT-relevant indicators to rank 79 countries. The countries part of the index amount for 95% of world GDP.

The index lies between 0 and 120, with the best-in-class United States at 87. It is important to stress that this is only a mere indicator, and it should not be trusted blindly.

5.2.3 Telecommunication Sector in South Africa

The South African telecommunication network shows uneven patterns when it comes to coverage. Based on the *International Telecommunication Union*'s "*Broadband Map*", we can see that the coverage is concentrated on coastal cities with an exception for Johannesburg, the economic capital.

Figure 9 - Broadband Network in South Africa

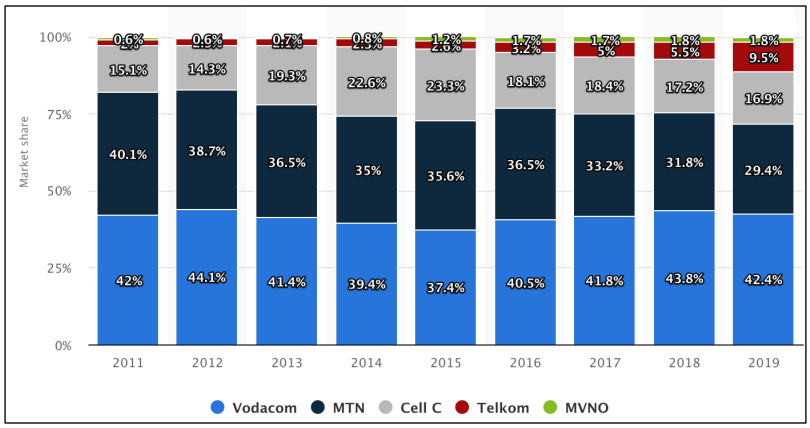


Source: ITU, Broadband Map

This network has been exploited over the years by mainly 4 mobile network operators:

- *Vodacom*, a South African sister company of the British giant *Vodafone*
- *MTN*, a South African company, operating across Africa and the Middle East
- *Cell C*, a South African company, operating only in South Africa
- *Telkom*, a South African company, majorly state-owned, operating in 38 countries across the continent
- Based on the statistics in Figure 10, MVNO, which is an acronym for virtual telecom service providers, is composed of other actors such as Virgin Mobile or Hello Mobile

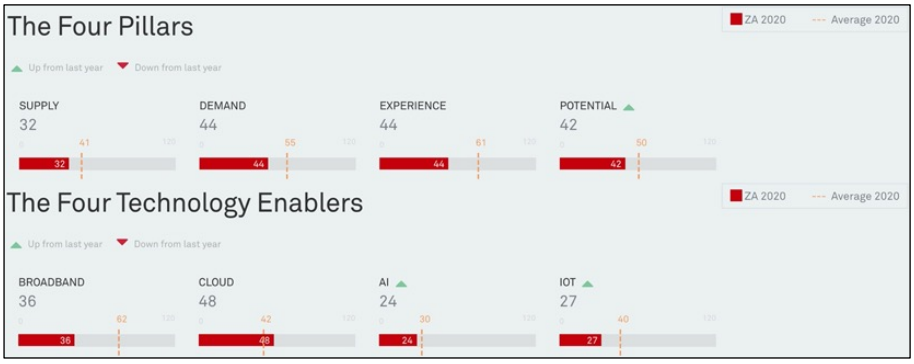
Figure 10 - Market Share of Mobile Network Operators in South Africa, 2011 - 2019



Source: Statista, businesstech.co.za

As Figure 10 suggests, the market is highly concentrated around Vodacom and MTN who control over 70% of the market. Any telecommunication equipment provider, such as *Huawei*, would need to do business with at least one of the two to have a significant role and extract value from the market.

Figure 11 - South Africa GCI Extract



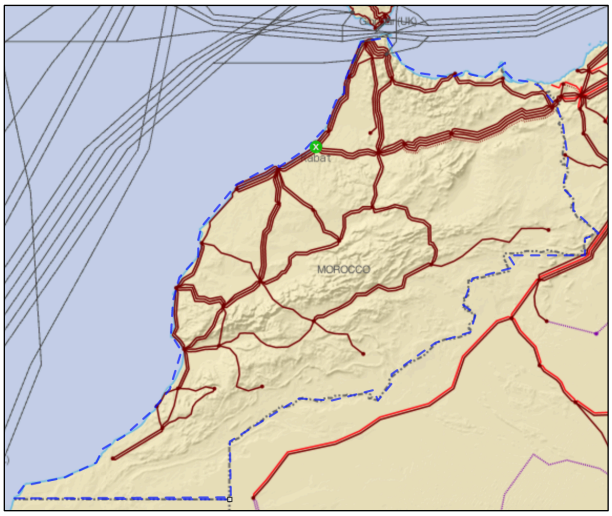
Source: Huawei, Global Connectivity Index

The 2020 South African Global Connectivity Index is 41, ranking 56th out of 79, behind Mexico and above Indonesia. As we can see in Figure 11, Demand still surpasses Supply, meaning there is still plenty of work to be done. In terms of Cloud technology, they are above world average which is encouraging but they are massively behind in terms of broadband which shows on Figure 9.

5.2.4 Telecommunication Sector in Morocco

The Moroccan telecommunication network is mainly controlled by three companies though 25 licenses to operate in the Moroccan ICT sector have been issued.

Figure 12 - Broadband Network in Morocco



Source: ITU, Broadband Map

First is *Maroc Télécom*, which is owned at 53% by United Arab Emirates' telecom *Etisalat*, with a substantial portion remaining under state control. They hold approximately 43% of market share. Second is *Orange Maroc* (formerly *Méditel*), who was second to enter the market when opened in 1999, is a subsidiary of French telecom *Orange* and hold approximately 34% of market share. The third is *Inwi* (formerly *WANA*), which is a subsidiary of Kuwaiti telecom *Zain*, with the state (or the crown) also having a significant vested interest in the firm, which holds approximately 23% of market share (Medias24, 2020).

What makes the Moroccan telecom sector's particularity is its concentration paired with the high stakes under government control in both *Maroc Télécom*, 30% state-owned, and *Inwi* with 70% controlled by *Al Mada*, an investment fund with the majority shareholder *Siger*, the royal family's holding company.

Figure 13 - Morocco GCI Extract

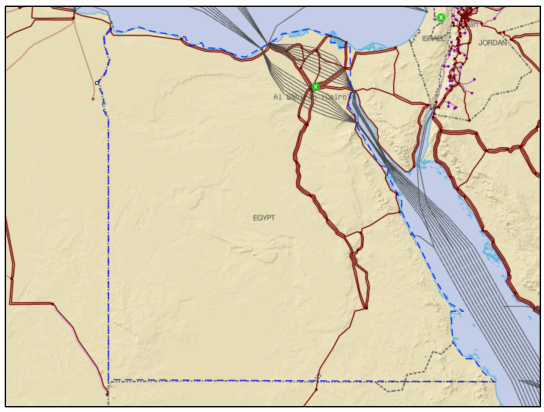
Source: Huawei, Global Connectivity Index

The 2020 Moroccan Global Connectivity Index is 38, ranking 60th out of 79, behind Indonesia and above India. Positives are to be taken in their technological advancements though many areas are still lagging. They are very much behind in terms of broadband but have managed to reach 2020 average in terms of cloud technology.

5.2.5 Telecommunication Sector in Egypt

The Egyptian telecommunication sector has been shared among four prominent players since the liberalization of the sector back in 1998.

Figure 14 - Broadband Network in Egypt



Source: ITU, Broadband Map

The first to enter the market was *Telecom Egypt*, a majorly state-owned company. Then came the French usual suspect *Orange* who set up shop as *Orange Egypt* and has been earning over a quarter of its revenues in the MENA region from Egypt. Another market entrant was *Vodafone Egypt*, which is owned at 45% by *Telecom Egypt* (Wikipedia, 2021) which equates to the state. The latecomer to the party is the United Arab Emirates' company *Etisalat* who earned its license to operate in 2007.

The number one service provider in Egypt currently is *Vodafone Egypt* with roughly 36% market share, followed by *Orange Egypt* and *Etisalat* with respectively 32% and 30%. At the back of the queue, we find *Telecom Egypt* with roughly 2% market share (Oxford Business Group, 2017).

Figure 15 - Egypt GCI Extract

Source: Huawei, Global Connectivity Index

The 2020 Egyptian Global Connectivity Index is 36, ranking 64th out of 79, behind India and above Venezuela. They have a solid experience, but their current infrastructure and digital landscape will need to be addressed to catch up with the needs of the population and industries.

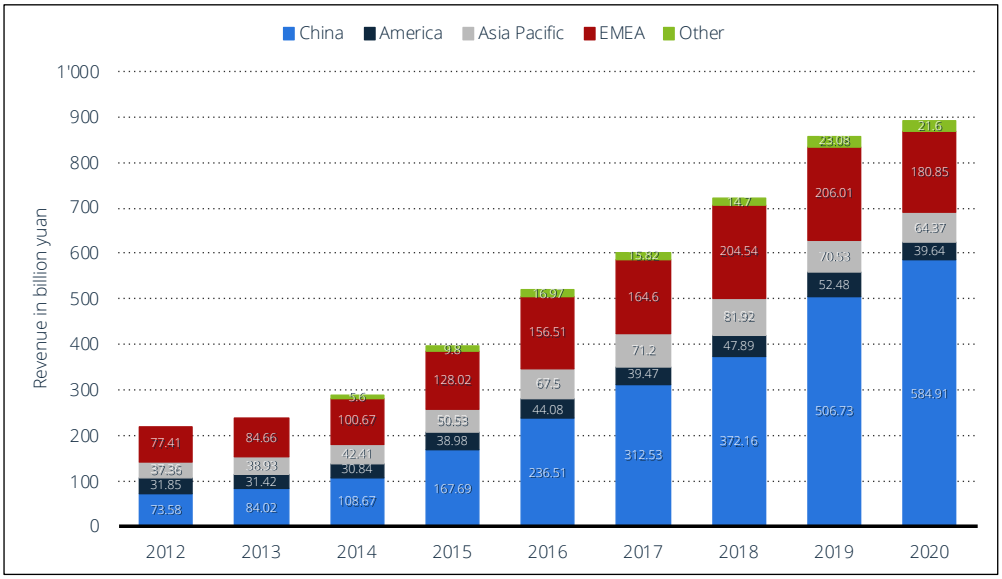
6. Empirical Analysis

6.1 Huawei in Africa

6.1.1 In Numbers

Huawei has been steadily growing from a humble electronic equipment reseller to a multi-billion-dollar business. Though observers describe it as a stratospheric rise, with only a couple of decades of work to show, one could argue that time is distorted in such fast-growing industries and what we consider as decades almost feels like centuries in this line of business. Moore's Law is a frequently used concept to illustrate how fast the tech industry is growing, day-by-day, describing exponential advancements in technological capabilities at a fragment of the cost used to be incurred. We can almost read through that law when we look at *Huawei*'s revenue growth over the years.

Figure 16 - Huawei Revenues by Region, 2012-2020



Source: Statista, Huawei Annual Reports

Our region of interest, EMEA in that graph, has experienced a particular growth in revenues generated over the last 8 years only their China operations could surpass (Huawei, 2020), thanks to the various alliances and partnerships they were able to form with telecom providers. This testifies of *Huawei*'s commitments to be ever-present in that area of the globe and capture value far from the Chinese borders.

But as EMEA is a cluster of Europe, the Middle East, and Africa, we shall dig deeper to understand how important the African continent is for *Huawei*. Ding Shaohua, president of *Huawei* Middle East and North Africa back in 2009, insisted Africa ranked highly on the company's agenda.

> *"Huawei will grow its investments and presence together with Africa. The telecommunication sector is emerging as a driving force for local economies, in terms of creating income and jobs, and we at Huawei want to be a key contributor to African nations."* *(ITP, 2009)*

In terms of competition, the usual suspects are lurking behind. *Ericsson*, *Nokia,* and *Alcatel-Lucent* on the western side and *ZTE* (Tugendhat, 2020) on the eastern side are all trying to spoil the Chinese giant's party on the African market, where they are still massively dominant.

6.1.2 Huawei in South Africa

Huawei first formally entered the South African market back in 1998 by setting up an office in the political capital Pretoria before migrating to Johannesburg to set up their East and Southern Africa regional headquarters in 1999. They have mainly provided equipment to the likes of *Telkom*, who have become strategic partners over time as is customary in this line of business. Advanced 3G terminals were also supplied to *Vodacom* and *CellC* who also had contractual agreements with the Chinese giant. *Huawei*'s commitments in South Africa have extended through the strategic global partnership with *MTN*, signing a 3-year deal worth $600 million for 22 African and Middle East markets back in 2005. *Huawei* also picked up state mandates, such as for the *Government of the Northwest Province* to improve local infrastructures (Institute of Developing Economies, 2009).

Huawei has also focused its efforts on developing training initiatives by funding talent development programmes, training centres in Woodmead and collaborating with South-African universities such as the *University of Cape Town, Zululand University, Tshwane University of Technology*, and the *University of Venda* to get students educated and *Huawei* certified on matters related to ICT. One can find on their website:

> *"Huawei offers several HCIA (Huawei Certified ICT Associate) courses through the online program: Routing and Switching, WLAN, Security, Cloud Computing, Storage, Big Data, IoT and, AI. Huawei has also organized a "Training the Trainer" programme for instructors seeking to get their Huawei Certification." (Huawei, 2020)*

They even have the *Department of Communications and Digital Technologies of South Africa* on board by designing grassroots training programs, encouraging student exchanges, and offering free online courses on matters related to ICT. Their "*Seeds for the Future*" programme aims to bridge the gap between theory and practice and to develop local ICT talent through knowledge transfer and hands-on experience.

6.1.3 Huawei in Morocco

Huawei has been present on Moroccan soil since 1999, first setting foot in Rabat, the coastal capital city. Years later, they established themselves in Casablanca which became their regional headquarter covering its French-speaking African markets such as Algeria, Tunisia, Senegal, Chad, Mali, Mauritania, and Niger. This head office has been providing services to its subsidiaries such as management, supervision, consultation, training, and technical support.

Those regional headquarters were made possible after acquiring a special status in Casablanca called "*Casablanca Finance City (CFC)*" which gives incentives to regional headquarters, among others, such as various tax breaks, unrestricted employment of foreigners, and no foreign currency obstructions. The likes of *PwC*, *Bank of China*, *BNP Paribas,* and *Coface* all have this status in Casablanca (JETRO, 2018). Based on the insights from the interview with *Huawei Morocco* PR Managers, *Huawei* currently have two offices in Casablanca and one in Rabat. All these premises have been carefully located as close as possible to the offices of telecommunication service providers *Maroc Télécom*, *Orange Maroc* and *Inwi* to serve them best.

Like in other destinations, *Huawei* fostered relationships with the most influential actors on the market, building strong commercial partnerships along the way. Training has also been an integral part of their strategy, having consolidated partnerships with 21 Moroccan universities for the "*Huawei ICT Academy*".

Huawei was quoted when asked about the current state of the Moroccan telecommunication sector:

> *"Morocco should continue to expand its digital infrastructure and online content. They need to expand citizens' access to broadband with an emphasis on sharing knowledge and supporting local service providers to develop IT markets. Alongside partners like Orange Morocco and Huawei, the government's commitment to achieving ubiquitous connectivity and connecting the unconnected in rural areas are steps in the right direction."* *(Huawei, 2009)*

6.1.4 Huawei in Egypt

Huawei entered the Egyptian market in 2000 and rooted its Middle East and North African regional headquarters in the capital. *Orange Egypt*, formerly *Mobinil* has been partnering up with *Huawei* on 2G and 3G solutions. They have also enjoyed a partnership with the state-owned telecommunication service provider *Telecom Egypt* who have been very keen on expanding their coverage and quality of service over the years. *Telecom Egypt* vice-chairman was quoted:

> *"Huawei offers industry-leading transmission network architecture (…) and enables us to give our customers access to new, advanced services while enhancing the security and quality of existing services." (Huawei, 2017)*

Huawei has also invested in regional training facilities in Cairo for aspiring ICT professionals as well as university training programs. In 2017, they inaugurated their "*Customer Solution Innovation & Integration Experience Center (CISC)*", a facility for knowledge exchange based on market intelligence and customer-driven data. The following individuals were quoted at the opening ceremony:

ICT Minister Eng. Yasser El Kady:

> *"CISC will be considered a valued element in achieving continuous comprehensiveness in technological field on the level of services provided in Egypt, developing human capital and training them to gain the field's experience and finding technical innovative solutions for regional business community which shall achieve by this an economic integration based on innovation." (Huawei, 2017)*

Song Aiguo, Chinese Ambassador in Egypt:

> *"Huawei is considered a leading pioneer for Chinese enterprises seeking overseas development. We will continue to support Huawei's drive to bring more benefits to the Egyptian people by providing advanced ICT products and services." (Huawei, 2017)*

Terry Liu, CEO of *Huawei Egypt*:

> *"Huawei has always been committed to understanding the latest trends and creating innovative solutions to master the challenges that might face our customers in Egypt. We will continue moving towards empowering Egypt's digital transformation, exploring new innovative ideas for local enterprises, industries, and operators. With the help of the CSIC, we will continue our innovation mission in Egypt, bringing our global experiences to the region, serving more needs of the ICT industry. With the rapid growth of ICT industry in Egypt, Huawei will double our effort to play a major role in developmental contribution. Huawei will continue to provide quality products, services, and solutions to customers for our confidence that Egypt is a regional investment promising market. We always see Egypt as one of our most strategically important markets and attaches great importance to local human and technical resources in the country. We will continue investment in Egypt. The opening of the regional CSIC today is part of our commitment to increase investment in Egypt. Besides, we are building a regional OpenLab in Egypt, which would be a new center of excellence to foster joint, customer and business-driven ICT innovation with local partners. We are in the process of preparing for more capacity building programs in cooperation with universities, government departments and local partners in Egypt. Last month, we signed a MOU with Ain Shams University to set up Huawei Academy. Besides, we will launch again Seeds for the Future program in Egypt, which is Huawei's global flagship CSR program." (Huawei, 2017)*

7. Discussion of the Factors at Play

7.1 Interview Analysis

7.1.1 Public Relations Managers Huawei Morocco

The primary data collection conducted for this bachelor thesis partially took place through a video-conference meeting with two Public Relations Managers at *Huawei Morocco*, with mainly one interacting and the other witnessing. Though with their preliminary approval, I was not able to get the transcribed interview in this paper, an internal policy at *Huawei* prevented it from happening. Nevertheless, I was able to fashion a summary and short analysis from what turned out to be more of a conversation. The interview was rhythmed by the questions you can find in the Annex section of this paper.

The employee I was able to talk to had been employed at *Huawei* for 2 years and became Public Relations Manager at *Huawei Morocco* a few months ago. She described her function as being responsible for the communication in three main areas: Political relations, CSR initiatives relations, and Media relations. This shows which areas *Huawei* has strategic communication considerations.

She then pursued by discussing *Huawei*'s involvement in Morocco since 1999. She provided insights on their operations, sharing that *Huawei* had three corporate facilities in Morocco, two in Casablanca, and one in Rabat. These facilities have been located extremely close (literally next-door neighbours) to *Maroc Télécom*, *Inui*, and *Orange* offices. This shows a clear commitment to serving their partners to the best of their abilities with a second to none proximity, adding to their competitive advantage in the area. She also described the Moroccan market as highly competitive for both *Huawei*, with other Chinese giant *ZTE* looming over, and for telecommunication service providers, with *Maroc Télécom* leading the charge.

She also provided insights on the strategic worthiness of the Moroccan market for *Huawei*, with the first element she described as political enrolment. The support, faith, and vision of the Moroccan government show an alignment with *Huawei* aspirations and sounded like a perfect match. And it makes sense as the infrastructure is ultimately under the responsibility of the state in the case of Morocco whose state-owned *Maroc Télécom* is responsible for the network. The current lacking infrastructure and potential for growth have also been mentioned.

She saw few common characteristics with other markets, whether neighbouring countries or more distant markets. She clearly stated that each market was different.

They have varying needs, wants, budgets, aspirations. There are also differences in the way markets are run, with a variety of telecommunication partners. She described the firm to be completely devoted to their clients, with always a desire to come up with solutions tailor-made to the client's requirements, always trying to reach the best solution while assessing the potential for collaboration in the future as more innovative solutions flood the market. She used the example of 5G, saying that this solution could not be applied everywhere based on the simple fact that the current infrastructure of the market at hand had to be sufficiently advanced, through 3G and/or 4G (as 5G is an add-on to 3G/4G infrastructure).

Regarding the perception of the Moroccan people of *Huawei*, she described it as evolving in a positive direction. She said that Moroccan people first saw *Huawei* as only a smartphone brand and that through their communication efforts and CSR initiatives such as "*Seeds for the Future*" and "*ICT Academy*", they have gradually elevated their status by creating awareness which bought the support of Moroccans for *Huawei*, who have accepted their presence and encouraged their activities with positive feedback along the way. She also touched upon the delicate subject of political interference with the firm, namely in the US during the Trump administration. She said that the American decision raised eyebrows worldwide in their customer base and that they had to reassure everyone that they are a firm with economic aspirations who have been wrongfully depicted as a firm with political aspirations. They were happy though to see that the American decision did not phase out the faith of their Moroccan clients who still trust *Huawei* as their service provider.

Overall, this interview, though relatively corporate-friendly, gave out many insights in the life of *Huawei* in the Moroccan market. The information provided were very valuable to shape the "Discussion" section of this paper.

7.1.2 GIP Digital Watch Telecommunication Infrastructure Expert

The telecommunication infrastructure expert was the second source of primary data gathered for this paper. He is part of the *Geneva Internet Platform (GIP) Digital Watch observatory*, a think-tank sponsored by the *Confederation*, the *Geneva Canton* among other public institutions. They are based in Geneva and have an international pool of experts working in the fields of telecommunication, internet governance, capacity building, and development as well as policy proposals.

The expert interviewed was based in the Caribbean but had experience with the *GIP* on global issues related to telecommunication infrastructure. His knowledge of the

Caribbean, as well as Latam, was easily transposable when it came to the questions asked which were quite broad as you can see in Annex 2.

We first discussed the telecommunication infrastructure sector at length, explaining in simple terms their role as roadways and the challenges associated with not having the appropriate infrastructure in place to tackle the needs of the population and industry.

We then dove deeper into the topic of telecommunication infrastructure in Africa which comforted my previous assessment of Africa being a multispeed continent. He said that pockets, regions were well developed ICT-wise, whereas other landlocked states were left lagging. He was confident in the idea that every single state had ICT on the agenda and that every state across the globe wants to develop further their infrastructure to move towards a more digitalized world. But he also said that states and regions had different aspirations and plans for the short and long-term future and that depending on the populations, there were different demands and needs which sounds obvious but certainly adds a level of complexity for service providers in shaping adequate solutions.

We went on to discuss the challenges of the African landscape, and the main elements that came out were the difficult topography, remoteness of rural communities, and the lack of understanding from service providers of the actual needs to be addressed which result most of the time in inappropriate solutions which are both too expensive and inefficient. "*What do we have?*" and "*Does what we have work, even if it's not the fanciest thing, but it's delivering the value?*" were questions he stressed and he talked about the example of *M-Pesa*. It is a mobile phone-based money transfer service that was launched in 2007 by *Vodafone* and *Safaricom* in Kenya. It enables millions of unbanked people in Kenya and Africa to transfer money, pay bills, and trade. In 2019, *M-Pesa* counted 41.5 million active customers that made over 12 billion transactions, and the technology behind *M-Pesa* was simple SMS, nothing fancy …

He then discussed his opinion over *Huawei* and other Chinese ICT service providers like *ZTE*'s growing involvement in the African region. He was very careful in the way he answered the question, not going too deep in the specifics and the geopolitical intricacies but he did concede that major powers in the world can influence opinions in the way they treat their counterparts, how generous they are, and how involved they are in building bridges. And when we look at regions where growth and development are lagging, allegiances may come to fruition.

Emphasis was also made on China's ability to see the world and shape its geopolitical aspirations on a long term horizon which allows them to nurture relationships and come

up with long-term commitments. And when you start doing business in and with Africa, China eventually comes up and presents its infrastructure providers, its vendors, and the natural suite is that you would expect African states to turn their attention towards these providers.

He said that what was most concerning was the Western world's lack of understanding of these new players and their practices and that with the unknown comes fear which could explain the US's firm commitments to block *Huawei* from their market. But he does acknowledge that they've been extremely advanced in their technology and that not trusting them could be setting us for failure. The security aspect is a valid concern in his view, and that some could come to regret their short-termism when offered an appealing solution at first.

Based on *Huawei*'s reported 70% market share in the telecommunication equipment sector in Africa, he made his point clear, stating that competition is always better than monopolies. He conceded that 40%-50% could be viable in that given line of business but overall, he showed concern over the monopolistic behaviour that emanates when you reach a certain position. He was fearful over the level of service which most certainly never increases at the pace of business growth, there were also concerns over innovation and the lack of incentive for it. The locking effect over their markets would ultimately be detrimental to the end customers.

But simultaneously, he saw potential in such a dominant position. A kind of grid-like network seamlessly connected allowing for easier usage for end clients and driving costs downwards through standardization. He also emphasized the idea that in order to turn opportunities into realities, engagement through the young generation would prove pivotal. If they can encourage collective thinking and collaboration, tremendous things could broil up from it. Young creative ideas and improvements to accessibility of technology can enhance the frame for everyone involved.

One sentence that stood out was: "*We as humans have always been able to gain value from generic things*". This statement resonates and makes the argument of the monopolistic position credible. Driving down costs, making infrastructure accessible, building more capacity, and having a dynamic population could well contribute to the betterment of the community.

What came out from this conversation was how torn one can get in the light of innovation. His researcher side came out as fascinated by the technological advancements and pioneering efforts of the likes of *Huawei*. Excluding the concerns he had from a critical

eye, he believed that innovation and development towards a more digital future could come to a halt if we don't put aside feelings of fear and distrust towards the Chinese giant and that the ones losing out would eventually be the end consumer. But he also questioned the business integrity of the firm with regards to potential geopolitical involvement. He admitted that perhaps it was because of a lack of understanding, which is possibly why many fail today to give credit to *Huawei*. Ethical concerns were clear, and his overall perception of *Huawei* was divided, nor black, nor white.

7.2 Chinese presence in Africa

It is no secret that China has been of great influence over the globe in the past decades, exponentially growing from an agrarian economy to a global superpower tipped to surpass the US by 2032 in terms of GDP (CNBC, 2021). This influence has expanded far beyond its borders and has virtually an outreach at every corner of the globe.

One candidate that has been on China's watchlist for over two decades now is Africa. Where Westerners were already established in Africa, with billions worth of humanitarian and development aid distributed every year, preferential trading terms, co-financed projects, and economic inclusion, China trod carefully and gradually understood the stakes before grasping the potential of the last frontier continent.

If we were to simplify the Chinese geopolitical aspirations, we could narrow things down to two main goals. First, to support the "*One China policy*", consolidating its control and influence over Hong Kong and isolate Taiwan. The second goal is to rebalance the playing field when it comes to American hegemony in international relations. On its quest, China has managed to knit diplomatic relationships with somewhat marginal but, resource rich-countries, to secure access to crucial resources to their growth.

This argument has been supported by the expert in telecommunication infrastructure at the *Geneva Internet Platform (GIP) Digital Watch* I was able to interview from which you can find the full transcript in Annex 3 of this paper. His point regarding Chinese involvement in Africa, in simplified terms, was that through the strong commercial relationships they managed to build with the African states, the natural next step was always going to involve more Chinese activity on African soil with the Chinese service providers gaining the favours of those states in need of further development.

7.2.1 China-Africa Summit

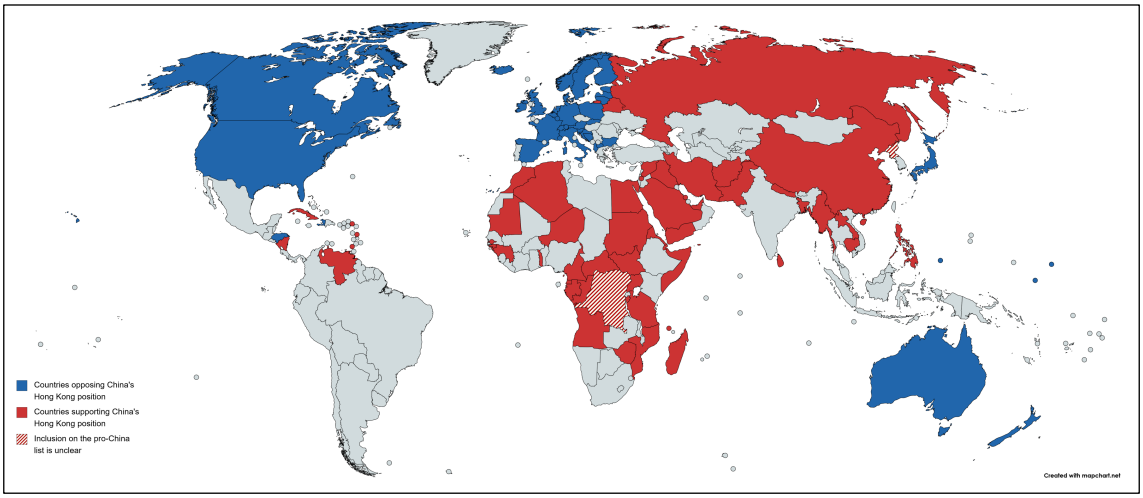
Every three years, the *Forum of China-Africa Cooperation (FOCAC)* gathers African leaders and the Chinese government with the objective to enhance understanding,

expand consensus, strengthen friendship, and promote cooperation through joint and equal consultation.

This summit is the only collaboration scheme of this magnitude involving both Africa and China. The *OECD* does not hold such meetings with African leaders and China is only relegated to an observer role in this particular frame. The strategy behind such actions is a clear attempt to secure the trust of African states and build a platform for trade and collaboration. China has also recently entered the *Regional Comprehensive Economic Partnership (RCEP),* a historic free trade agreement with ASEAN and Oceania countries, showing a clear shift away from the West, focusing their attention on fellow Eastern countries as well as Southern hemisphere countries.

One hypothesis we could formulate regarding Chinese geopolitical intentions is as follows. China is on a quest to gain allies to make its voice heard and consolidate its positions in multilateral organizations like the *United Nations*, *World Trade Organization*, *World Health Organization* among others. We could justify it through the growing proportion of Chinese representatives at high official roles in the said organizations. You can also see an illustrative example of this hypothesis; in red, countries supporting China's position regarding Hong Kong, and in blue, countries opposing China's Hong Kong position.

Figure 17 - Map of Country Opinions on China's Hong Kong Position



Source: The Diplomat, *Which countries support China on Hong Kong's National Security Law?,* 2020

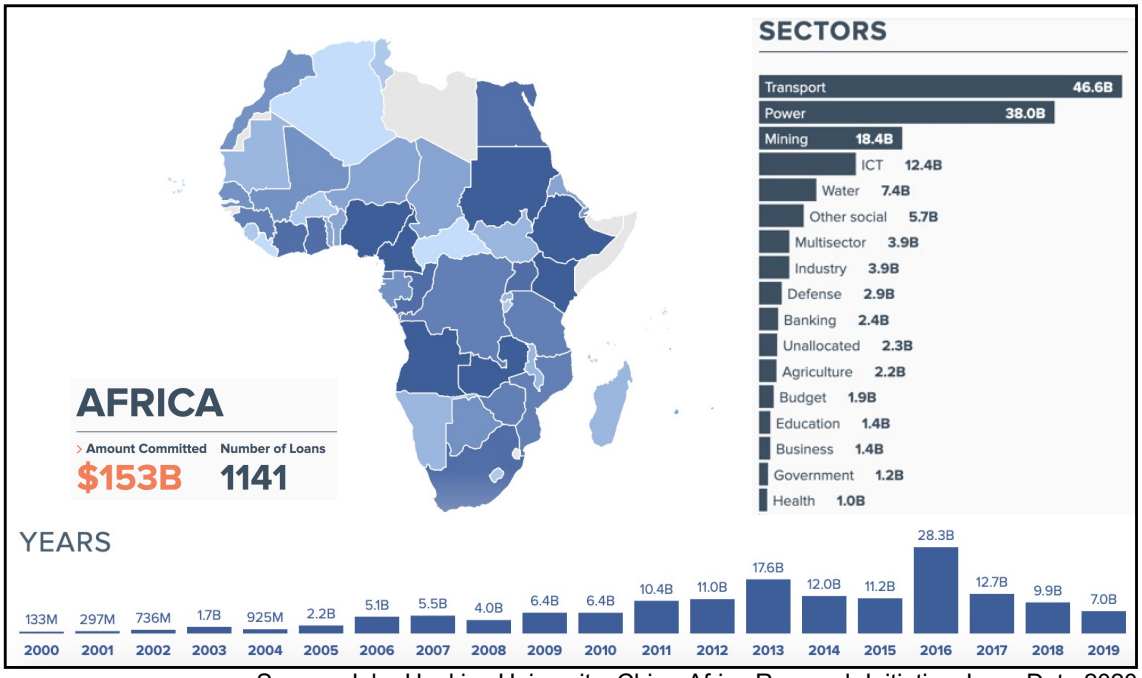
Hong Kong has very few ties with Africa (apart from being another bridge to facilitate trade and investment between the two regions), which brings up the question of why these countries would even have an opinion on the situation altogether.

The hypothesis raised does not imply that China bought support and votes from these countries on the world stage but rather provides an alternate explanation to Chinese involvement in Africa. It could be a powerful image for the idiom: "*Don't bite the hand that feeds you*".

7.2.2 China-Africa Debt

When China officialised its commercial relationship with Africa 20 years ago, we saw an increasing proportion of loans obtained on African soil originating mainly from the *Chinese Exim Bank* and *Chinese Development Bank*.

Figure 18 - China-Africa Loan Map, 2000-2020



Source: John Hopkins University, China-Africa Research Initiative, Loan Data 2020

20 years later, the most accurate picture, courtesy of the *China-Africa Research Initiative* at *John Hopkins University*, shows $153B loaned out over the period to African states and African state-owned enterprises. The largest volume in loans has been distributed for transportation-related projects, such as railway and ports followed by Energy, Mining, and ICT (China-Africa Research Initiative, 2021).

Africa has undeniable potential, especially when you consider the richness in natural resources like minerals and petrol, the land capital, the young population, the cheap labour among other elements. If China believes in the African dream, the continent will need to be ready to trade large volumes of goods with China, which can only be achieved with infrastructure on par with the volumes at hand, capable of withstanding the economic and logistics challenge.

In a scientific review, more precisely in a G-24 Policy Brief, Helmut Reisen, ex-Head of Research of the *OECD Development Centre* stressed in his paper that China is having a positive impact in Africa through its efforts to encourage debt contributing towards stimulating exports and improving infrastructures. He also emphasized that majority of the projects under Chinese financing are undertaken in non-HIPC (Heavily indebted poor countries) countries thus not putting at risk the financial viability of its debtors (Reisen, 2007).

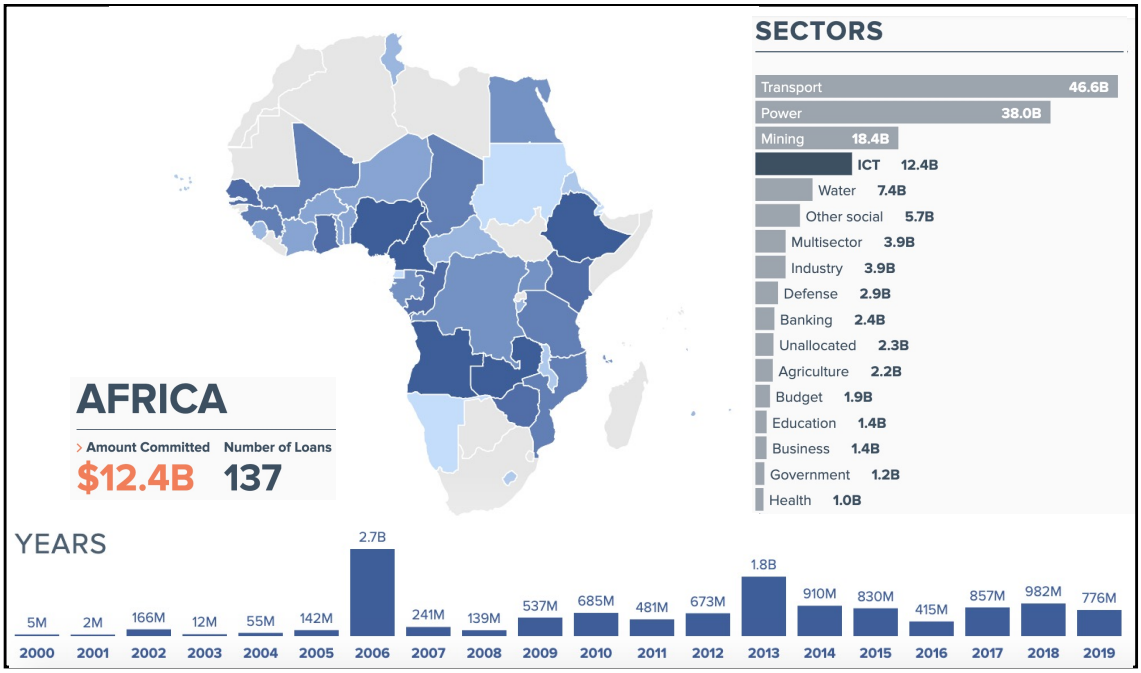
Debt may be regarded as a valid and legitimate way to promote economic prosperity and improve the lives of millions. China describes it as a win-win situation, Africa gets access to financing for development projects whilst China opens trading routes. Some though have challenged that idea and went as far as denouncing debt-trap diplomacy; a mechanism designed to hold Africa's most vulnerable economies in a financial chokehold.

Samaila Zubairu, *Africa Finance Corporation*'s (AFC) President in a communiqué seemed unfazed by the Chinese win-win and friendly rhetoric and regards Chinese lending as straight-up commercial transactions rather than giving away cheap favours. He also highlights the Chinese responsibility, in association with the local governments, to design proper processes and rigorous supervision to improve expected outcomes of these loans (Euromoney, 2020). It is understood that in case of failure to reimburse those loans, the terms applied could be highly detrimental to the debtor. These terms include infrastructure seizures by the Chinese government, such as harbours, where all proceeds of the infrastructure could be used to reimburse the loan. Terms regarding the resolution of issues related to debt are also to be settled by a Chinese court of Arbitration (Confidential Source, 2020). It is important to note that no such severe case has been reported thus far but it does raise a few question marks on those practices.

7.2.2.1 ICT Sector

In terms of the ICT Sector, the data gathered by the *China-Africa Research Initiative* as seen on Figure 19 shows $12.4B loaned out to the various African states between 2000 and 2019.

Figure 19 - China-Africa ICT Loan Map, 2000-2020



Source: John Hopkins University, China-Africa Research Initiative, Loan Data 2020

To put that into perspective, the *World Bank* granted $17.4B in loans during the same period for African and Middle East ICT projects (World Bank, 2021). This testifies of the magnitude of Chinese involvement in ICT-related projects on the continent. It is important to mention that the data is only based on public sector investment, meaning the amounts committed represent only part of the picture.

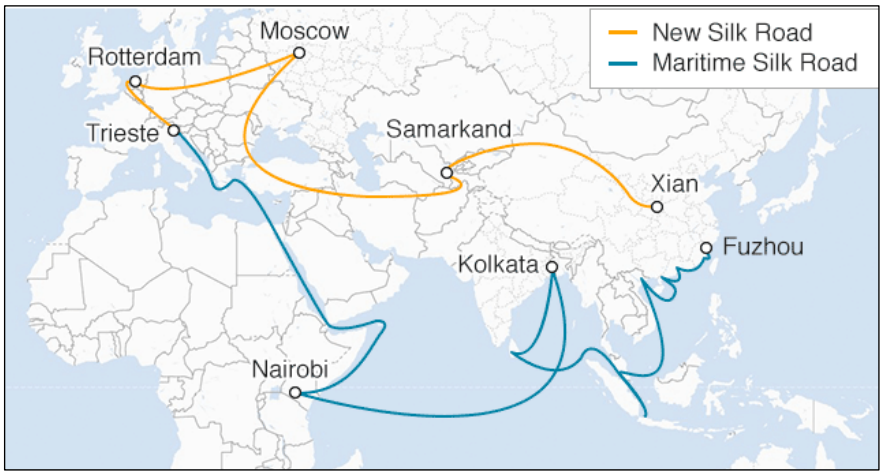
7.2.3 New Silk Road – The Belt & Road Initiative

We can't talk about China's geopolitical strategy without mentioning the elephant in the room. The Belt & Road Initiative was launched by Xi Jinping in 2013 and has set the tone for what lies ahead in terms of China's vision of creating and consolidating key trading routes and shaping a world more connected than ever before. These routes crystallize the ever-growing commercial aspirations and resource-intensive needs of the Middle Kingdom.

Terrestrial infrastructures take the shape of roads, railways, starting from East to West China, with routes spanning across Eurasia (Kyrgyzstan, Uzbekistan, Tajikistan, and Kazakhstan), Russia, and all over Europe (Wikipedia, 2021). Efforts are also being made on the maritime side with routes starting from Chinese port cities Fuzhou, Shanghai, Shenzhen, and Hong Kong before passing through the straits of Malacca, with stops in Singapore, Port Klang (Malaysia), Ho Chi Minh City (Vietnam), Kolkata (India), Karachi

(Pakistan), Colombo (Sri Lanka), Nairobi (Kenya), Obock (Djibouti), Jeddah (Saudi Arabia) among many other port cities along the way (Wikipedia, 2021).

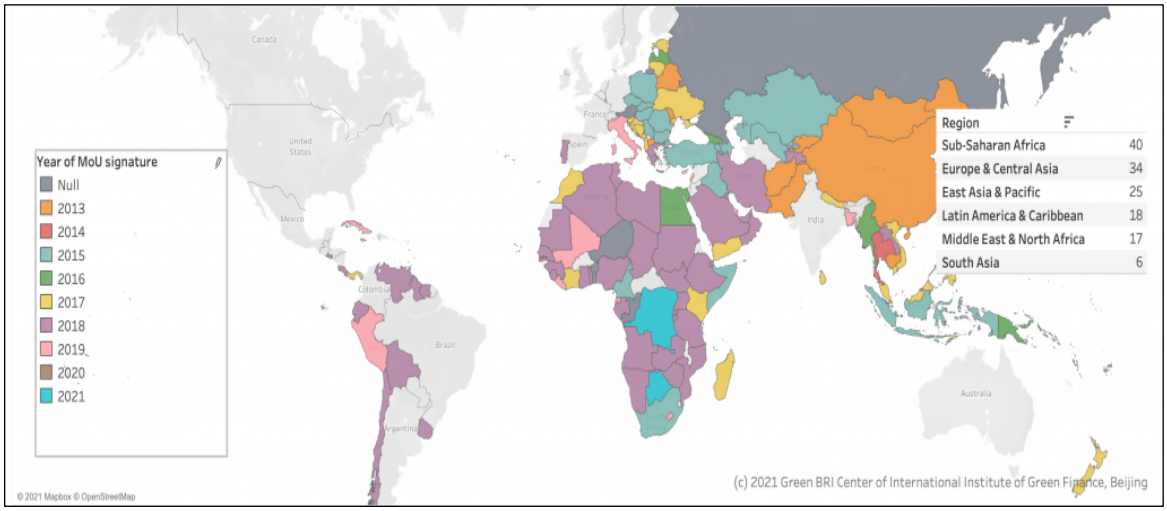
Figure 20 - New Silk Road, Maritime & Land Routes



Source: BBC, Chinese government

Opening up trade routes of such magnitude come at a staggering cost. Some value the investments at a mind-blowing $900B, with 68 countries directly involved and over half the world population impacted (World Economic Forum, 2017). Though this project, as it is, only directly impacts certain countries, most governments across the globe have shown their support by signing a Memorandum of Understanding with China to be part of the Belt and Road Initiative, with 140 signatories so far (Green BRI Center, 2021).

Figure 21 - Signatories of the Belt and Road Initiative



Source: IIGF Green BRI Center, 2021

This project most certainly makes developing countries salivate at the thought of boosting their commercial relationships with those part of the project, most notably

China. The tremendous potential for trade is too good to pass and most of them have shown willingness to ride along since the early stages of the initiative. This super-scale project does not only mean more trade, but it is also synonymous with infrastructure development in those countries of passage to make sure they can keep up with the trade flows. This in turn helps those states to secure important Chinese and Asian loans from most notably the *Chinese Exim Bank*, the *Chinese Development Bank*, and the *Asian Infrastructure Investment Bank*. And with those improved or newly founded infrastructure, they can become much more competitive on their regional and international markets making it an overall win-win situation on paper.

7.2.4 Western Aversion

Westerners have been ever-present in Africa over the years with many on crusades to save the continent of poverty and implement their political, economic and religious ways. But with the colonialist background and neo-colonialist tendencies of their actions, Africans have gradually lost faith in these white-collared saviours as they have experienced very few benefits from their presence; in some cases, they even experienced the opposite. This generalized statement has been exaggerated on purpose, but Africans today do not welcome Westerners with arms open as wide as before anymore as trust has eroded over the years.

No matter the volume of FDIs coming from the Western world, the damage seems done and hardly reversible. Studies were made regarding the voting habits of African states at the *United Nations* based on FDI volumes from the United States and China in Africa. Even though the US has been an ever-growing investor in the African continent, with a larger contribution than China, votes tended to favour Chinese positions when opposed to the US. These voting behaviours were both observed in the last decades. This could testify of a shift in confidence, a willingness to stir away from the West and try their luck somewhere else.

That is where a Chinese company like *Huawei* has an opportunity to pounce. Where Westerners have failed to recognise the reality of the African people, trying to come up with smart but inadequate solutions, *Huawei* was able, with modesty, to understand the needs and come up with tailor-made solutions, adequate in both cost and technology.

7.3 The Huawei Way

7.3.1 Origins

Based on the turbulent start of *Huawei*, with barely any capital, in a freshly liberalized ecosystem, with few skills and staff, success was never a safe bet. But they managed somehow to pull it off and become what they are today. And the empire's foundations are not to be forgotten.

The Chinese economic reforms in the 1970s-1980s, which saw the county evolve towards a market economy have enabled entrepreneurs to start their businesses, a kick Ren Zhengfei received with open arms. But with the already highly competitive landscape in urban centres, *Huawei* had to serve, so-called, less attractive markets and regions in remote China.

By choosing to serve rural areas, they were faced with challenges such as accessibility, cost, and appropriateness of their technology. This choice was a humbling experience as they had to come up with an optimal solution in terms of cost and durability whilst ensuring somewhat simple usability. This meant perhaps that the best solution was not always the most technologically advanced which may sound counterintuitive to some.

They still managed to do an excellent job, with a high level of service and availability as well as competitive pricing through their adaptive nature. These practices and humbling experiences have fed the company culture and this knowledge became particularly useful when they decided to internationalize and serve customers overseas. They began to do business where no competitors saw potential, namely in remote parts of the world where they have enjoyed tremendous success over the years.

These new markets were carefully selected based on fewer institutional barriers to guarantee easier access and accumulate valuable experience whilst avoiding the troubles of foreignness. At this stage, it does not differ much from any other Western company wanting to test itself in uncharted territory. The main differences came in the settlement and application of the strategy (Sun, 2009:155).

7.3.2 Internal Capabilities

7.3.2.1 Training

Based on the observations and research conducted on the topic, the targeting of countries such as Egypt, South Africa, and Morocco seems clearer. In fact, *Huawei* is a special breed of enterprise as they are both extremely capable when it comes to

providing basic, low-cost, and effective infrastructure and in providing high-tech, innovative, and superior levels of service. This dynamic works well with emerging economies whose booming areas and lagging regions are in a continuous quest for development. Fast-moving cities have vastly different needs from Bedouin villages. The non-homogeneous nature of these markets sets *Huawei* up for success as the knowledge acquired in rural areas and their relentless R&D efforts can both pay off at the same time.

Besides, by elevating the level of knowledge of the industry and their products through training centres scattered across the continent, they create a form of dependency on their products significantly improving customer retention as they are kept captive by their knowledge of *Huawei* technologies. When thousands of new ICT practitioners flood the job market and gradually take over jobs, they will be acquainted with the *Huawei* solution and be naturally inclined to work with *Huawei* systems which is what they know best. Besides, it would be an implicit way to give back to *Huawei* for the resources they invested in those students who will feel a sense of need to pay back the firm for the great opportunities it brought them.

Creating training centres is also a great way to contribute to local communities, thus making for smoother implementation. This does not only show the company's intentions to do more than just extract profits and leave but it is also a great tool to build trust with local governments as the win-win argument is more palpable.

Training within the company is also a crucial part of their success, and the need to foster a dynamic knowledge base within the firm's walls has been a priority for years. The firm's willingness for training and talent retention shows in their numbers: the average age of their employees worldwide is at 30 (Tao & Chunbo, 2015).

All in all, this training strategy is a long-term plan to build up trusted continent-wide relationships and eventually shaping worldwide networks of *Huawei* certified practitioners trained to adopt *Huawei* solutions seamlessly and promote ICT infrastructures in more frontier markets.

7.3.2.2 Innovation

Innovation is at the heart of *Huawei* activities and has been the lifeblood of the firm since its humble beginnings. This extract from an Emerging Market MNE internationalization strategy paper states:

> *"Data from Siemens indicates that the annual average working hours of European research workers is only 1,300 to 1,400 hours per year, while Huawei's reaches*

> *2,750 hours a year—twice as many as Europeans working in the same field. The average R&D personnel cost at European MNEs is US$120,000 - 150,000 per annum. At Huawei, the cost is only US$25,000 per annum. The input to output ratio of Huawei R&D work is ten times larger than its European counterparts. This explains Huawei's advantage."* *(Sun, 2009 :145)*

Ren Zhengfei was quoted about the company's goals stating they were:

> *"to develop the national industry, not set up joint ventures with foreign companies, closely follow global cutting-edge technology, to insist on self-development to gain domestic market share, and to expand international market and compete against international rivals."* *(Tao & Chunbo, 2015)*

Their innovation efforts also show in the impressive number of patents applications submitted to the *World Intellectual Property Organization*. Huawei topped the applicants list of patents once again with 5'464 applications in a single year. (WIPO, 2021)

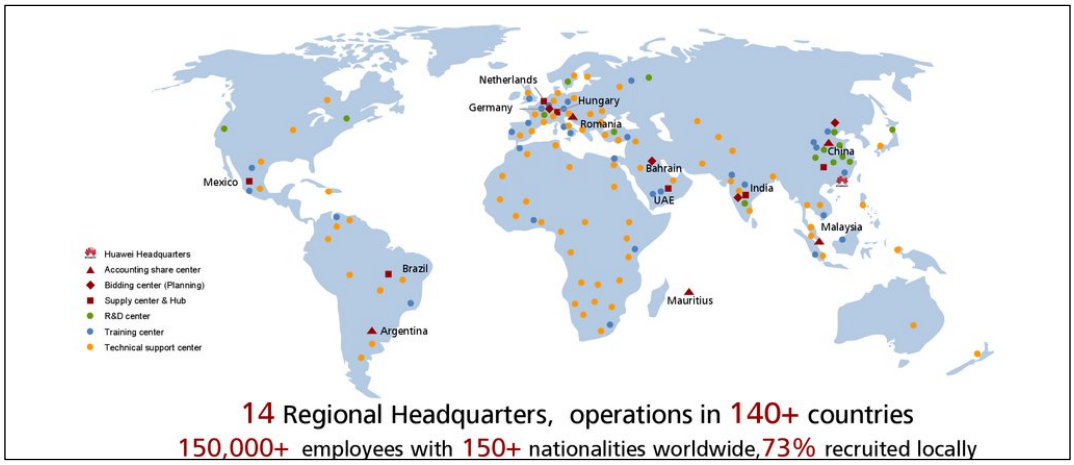
Yet, this relentless quest for newer and better products has been somewhat tainted by competitors who denounced unlawful acquisition of intellectual property with accusations of trade secrets transfers, reverse engineering, and technology theft with numerous cases having to be settled in court (Center for Strategic & International Studies, 2013).

7.3.3 Challenging the Establishment - Disruptive Chinese MNC

Disruptive and Chinese MNC could almost sound like a pleonasm as the Chinese way is miles away from our Western understanding of what MNCs are and what they stand for. The Chinese industry is renowned for its low cost of production and efficiency driven by low labour costs (though on the rise as quality of life improves), cheap raw material, and large volumes. This trend can be somehow applied to *Huawei* who are known in the ICT infrastructure business to be on the cheap side. *Huawei* can count on low-cost R&D through cheaper intellectual resources and engineers with facilities in China and India.

Their privately owned and almost unique status is also a scheme allowing for cost reduction. No need for fancy reporting like *IFRS* and no speculative investors putting pressure on the firm for dividends are among the advantages of such a scheme.

Figure 22 - Huawei Map of Operations



Source: Huawei, Corporate Presentation, Slide 5

Though they are located across the globe, they have a large presence in the Southern hemisphere, where labour costs are known to be lower adding to the tally of cheap resources to tap into.

That cheap attribute is somewhat offset though due to mainly two factors. First, their growth on an international level means their cost-advantage is eroding as they enter more and more developed markets synonymous with larger costs. Second, though highly proactive in patent applications, they still depend on massive amounts of essential patented technology for which they pay immense amounts of royalties. In 2010, they paid $222 million in royalties for patented technology to their competitors (Tao & Chunbo, 2015:67).

But cheap products will only take you up to a certain level, that is why *Huawei* had to do more. They have shown over the years that they can build infrastructure of quality, able to withstand the harshest conditions in the most remote areas. Seeing that they are looking to serve emerging economies, the equipment must be robust, durable, and perform its tasks as intended over a sustained period of time. It should be able to remain operational through sandstorms, snowstorms, heat waves, and resist dust, and particles. That is why *Huawei* was able to install telecommunication equipment at 6'500m altitudes on Mount Everest, in the Borneo rainforest, and the North Pole (Tao & Chunbo, 2015).

Another attribute of *Huawei*'s success is their know-how developed in a challenging environment which led them to persevere and, in many ways, allowed them to remain

humble. By understanding the mechanics of a developing market, by operating within their domestic market with the sole focus of satisfying the customer, they got an understanding and an appreciation for the needs of such ecosystems, and this knowledge is easily transferable to other emerging countries. By knowing what is appropriate, the pitfall of not offering appropriate solutions is avoided. By capitalizing on their vast networks worldwide they can serve each market to the best of their ability.

All these elements showcase *Huawei*'s adaptability and resilience in a challenging environment where very few shortcuts can be taken to develop lasting success. The elements stated above are typical of emerging market MNEs. These enterprises, especially *Huawei*, have been happy to learn from the Western best practices, but by adding their twist and know-how of challenging environments to the table, they will most certainly inspire a shift in the common practices of typical Western MNEs in the years to come.

7.3.4 Links to the State?

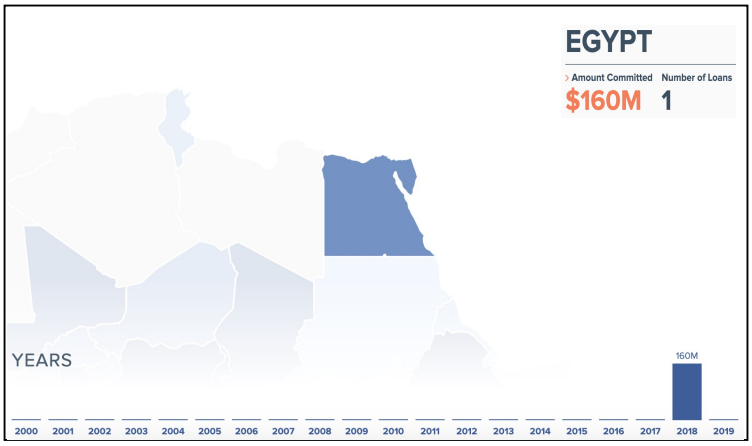
If *Huawei* will vehemently defend its privately-owned status when its detractors accuse them of having ties with the State, it is not as clear as black or white.

Yes, *Huawei* stocks are held by its employees and its founder. This accounts in fact for one of the largest pools of shareholders worldwide with the clever stock option scheme involving around 121'269 employees, who all have their say in the company's strategy (Huawei, 2020:2).

But the grey area becomes apparent when you dig further. The founder, Ren Zhengfei, was part of the Communist party before creating *Huawei*. He has enjoyed good relations with the government, earning *Huawei* billions worth of contracts to build up the Chinese ICT infrastructure over the years. Another notable element is the large credits *Huawei* either obtained through the various state-owned banks or benefitted from indirectly through the *Chinese Exim Bank* or the *China Development Bank* lending in developing regions who then commissioned *Huawei* to build ICT infrastructure. This kind of lending could be regarded as subsidy in disguise.

Official information is rare to come by in such field, but it has been confirmed that *Huawei* received a $10 billion credit line from the *China Development Bank*, as well as an export credit of $600 million from the *Chinese Exim Bank,* both in 2004, to bolster their international push towards more advanced markets. Though these kinds of credits obtained from state-owned entities may seem like plain, obvious, and unquestioned support from the State, they are justified by government policy aimed at both fostering a robust and self-sustaining domestic telecommunication industry and encouraging Chinese firms to "*Go-out*" and access foreign markets.

Figure 23 - China-Egypt Loan Map, 2000-2020



Source: John Hopkins University, China-Africa Research Initiative, Loan Data 2020

The *China-Africa Research Initiative* at *John Hopkins University* identified a single loan confirmed to be in the ICT sector for our 3 countries of focus. Egypt, through *Telecom Egypt*, received a $160M loan from the *Chinese Exim Bank* to build a project they mandated *Huawei* for. We could question ourselves whether *Telecom Egypt* was dealt with favourable terms based on their commitment to work with *Huawei,* but we, unfortunately, do not have access to that kind of data. But this certainly shows that the Chinese government is happy to loan money that will indirectly benefit *Huawei*, thus adding a dimension to this grey area.

There have also been claims that *Huawei* is dubious when it comes to striking deals with foreign governments. Critics of *Huawei* go as far as claiming that they sell cheap to troubled governments in deals that effectively amount to foreign aid, which is a practice financially supported by the Chinese government. Because of their number one status, *Huawei* can obtain cheap financing deals that they can then use to incentivize their customers through favourable payment terms. Loans for African contracts are being encouraged through preferential loans from government banks, which resembles once again subsidies.

There have also been numerous claims of security breaches with client data being fed to Chinese intelligence, most notably from the US who have elected, under ex-President Donald Trump, to ban *Huawei* from partnering with the likes of *Google* on consumer goods like smartphones and tablets. This adds to the controversy and maintains a cloud of uncertainty over *Huawei*'s global operations, though they have not been proven guilty thus far.

8. Conclusion

8.1 Epilogue

8.1.1 Polarization

The divide in opinion is something that became perceptible through the research and the interviews conducted with the PR managers the telecommunication infrastructure expert. In face of the unknown, of what we cannot understand, people will likely manifest fear and restraint. If you add preconceived biases, whether conscious or unconscious, and mix in media involvement, you will eventually shape unfavourable opinions, whether based on facts, logic, or irrational thoughts.

From a Western perspective, *Huawei* originates from a country many regards as controversial, to say the least. We are also very much used to the European and American ways of doing business as opposed to the seemingly distant ways of our Chinese counterparts. There has always been a conscious and unconscious divide between “the East” and “the West” as shown in the history books. And with that in mind, it was always going to be an extremely challenging environment for any Chinese company to become successful worldwide.

If we focus on *Huawei*, the first argument is that they act in a line of business very few people on Earth understand. Information communication technologies are very advanced and highly complex, and the general public is simply not interested in the technology itself, but rather the benefits it provides. This disinterest brings another layer in the psychological distance thus increasing the divide. Secondly, as it is a Chinese company, the polarized nature of this country means people will feel compelled to “choose sides” and based on the geopolitical landscape, divergent opinions inevitably emerge. For example, the South Korea’s *Samsung* does not divide quite as much from a public standpoint. Thirdly, *Huawei* has also been shown in contradicting light by the media with cases of intellectual property theft, data protection breaches, and other sources praising the giant for their prowess and CSR initiatives which have inevitably shaped opposing opinions. And finally, the sheer size of the company can also stir emotions with some rooting for the most successful and some preferring an underdog story.

Overall, what comes out of this assessment is that *Huawei* is partially a victim of factors independent of their way of conducting business but many “distances” and causes for division can be addressed by the firm to bridge the gap.

8.1.2 Why Global African Cities?

We could be tempted to answer this question: "*Why not?*". Based on the information gathered in the conceptual and empirical sections of my paper, this choice seems rational and makes the most sense.

Huawei seeks and finds comfort in internationalization, it has been part of their DNA for the last two decades now, and they need to find anchor points which global cities represent perfectly. Local infrastructures are already somewhat well-established which allows them to set up without too many hurdles. The international flavour of these cities, built by the solid foundations of advanced service providers means they can then use their location as platforms for future growth, hubs from which they can expand and touch new neighbouring markets whilst maintaining a firm position on the anchor market. This international flavour also makes foreignness a lesser issue as the cultural melting pot is already highly diverse, making for easier immersion.

The African case for global cities has another dimension only briefly touched upon in this paper. They share similar characteristics with one another. Cairo and Casablanca have access to water, which means commercial fleets will inevitably navigate through these cities. And with the New Maritime Silk Road project, the need for best-in-class connectivity is crucial to keep information flowing seamlessly and accurately between the ship owners and the tankers. Exact GPS coordinates, speed, or the ability to communicate live are all competitive parameters China is trying to achieve when it comes to popular maritime commercial routes susceptible to attracting the Chinese fleet, thus incentivizing *Huawei* to develop the current infrastructure. Johannesburg and Cairo both are regional financial hubs which in turn makes for easier access to financing, better investment conditions, and unparalleled connectivity with other markets worldwide. And as for Casablanca and Johannesburg, they are both known to be particularly advanced when it comes to infrastructure on the African continent which shows technical advancements making for fertile land for businesses and innovation, two sources of competitive advantage for *Huawei*. The three cities are also advanced in terms of education when compared to the rest of the continent which means a company like *Huawei* can hire locally, which is something they have been proudly displaying on their website, with 73% of employees worldwide hire domestically (Huawei, 2021). Besides, as they are very keen on training, they can further train domestic talent which has already been "pre-educated" in the ICT field by setting up their training centres which both serve the community and improve their image in the eyes of the governments. An element inherent to the African continent, though this statement is somewhat generalized, is the

less stringent nature of their governments which pose fewer institutional barriers than more advanced markets, which is another facilitating element for *Huawei* to do business as the ecosystem may feel laxer when dealing with certain matters.

Another notable aspect of the Alpha-, Beta+ and Beta Cities, especially in the African context, is their inherent potential for further development. They have solid foundations that can be built upon and there is room for further improvements which is exactly what *Huawei* will want to hear: business opportunities. With their segmented offering and a vast selection of products, they can capture new customers that emerge every day in these fruitful ecosystems, from the new middle-class who want to upgrade their phone to the hungry corporation who need a tailor-made solution, all the way to local governments who will want to ensure future development will not be halted by underperforming ICT infrastructure.

But the one keyword that resonates with *Huawei*'s decision to set up regional offices in these cities is networks. The critical difference between a so-called regular city from a global city is its ability to build bridges with the outside world through fast-flowing information, commercial flows, and ethnic diaspora. That ability to create connexions is what *Huawei* is hungry for. Their core mission is to shape a more intelligent and more connected world, and it starts by setting up nodes and gradually build a neural network spanning across the globe, knowing no borders.

8.2 Closing Words

8.2.1 Recommendations

Huawei is a multi-faceted business with a footprint virtually everywhere. The status of industry hero they managed to forge over the years is nothing short of exemplary. It is as remarkable as it is rare and *Huawei* should, based on the research conducted and the outcome of the interviews, try to leverage their experience and knowledge of operating in a highly diverse and challenging environment.

By creating knowledge centres, training facilities and further develop a *Huawei* market intelligence business unit, they could further exploit their competitive advantage as a global service provider. Harmonization and alignment of each and everyone's interest should be the cornerstone of *Huawei*'s mid-term strategy. They have already been establishing training programs with universities and building training centres to reinvest the value they captured into lasting and self-sustaining incubators. And these efforts should be encouraged further and be brought to the next level. This market intelligence

could also benefit both B2B and B2C activities and could further consolidate the end-to-end approach of *Huawei* who supplies both the solution and the means to use that solution in the best possible way.

Though, these practices can only be successful if they manage to keep their customers on board and connected to the firm. The sense of belonging of employees felt very clear and vibrant in the interview which is something outsiders may well challenge. But if true, it can be a source of great covetousness from competitors. And this sense of belonging should also transpire and go beyond the walls of the company into their customer base whether at individual and household-level to local and national government-level. The sense of belonging shapes an unbreakable bond between the firm and its stakeholders which further enhances company performances for the years to come.

Something that has been lacking in my observer's eyes is transparency. The opaque nature in terms of communication with the public has been intriguing. As it is a private entity, compliance with various reporting standards is out of the equation, but they should do more in that respect to engage with their stakeholders. Doubling up their efforts to appeal through communication, transparency, and showing an open face could well avoid trust from vanishing under their feet with the negative claims attacking the firm's business integrity. Perhaps more efforts in sponsorship deals in international events, sports events, cultural events, and ambassadors could see them improve their image and bridge the invisible gap with the West. This could allow *Huawei* to reach the next level of their business expansion and make the best of the business opportunities at their reach.

8.2.2 Limitations & Potential for Future Research

Some of the limitations of my bachelor thesis were predictable from the start. Based on the opaque nature of corporate activities in general, but particularly Chinese MNC activities, factual, up-to-date, reliable, and precise information was scarce which led to the empirical dimension potentially lacking in substance. General information was available, but it certainly lacked detail. This challenge was predictable I was dealing with a privately held company as well, adding to the lack of transparency. I was also undoubtedly limited by my geographical location as the chosen regions were far from both my location and my roots. That is why I had to decide against focusing exclusively on the global cities and take a step back towards national presence. Another limitation was my limited ability to connect with people both because I had few opportunities and because of the Covid-19 climate, though the video-conference argument could be made.

Several staff members from the *International Telecommunication Union* were contacted but never answered my interview requests, neither did the various regulatory telecommunication bodies in South Africa and Egypt and neither did the *United Nations*' *Internet Governance Forum* and the same applies to staff at the *Geneva Centre for Security Policy*. Morocco's "*Agence Nationale de Réglementation des Télécommunications*" told me to contact *Huawei* directly. I also experienced limitations regarding the *Huawei Morocco* interview with difficulties to get organized and troubles accessing the recording of our interview which prevented me from providing you with the transcript.

Overall, I sense the potential for further research lies in deep diving into *Huawei*'s internationalization strategy on a worldwide scale which could unveil patterns, similarities, and common characteristics of the firm's actions. This could improve further our understanding of their aspirations as a new breed of global service providers. A local dimension in global cities' study could also add a greater depth and a real-life dimension to this study, with details and intricacies tough to match.

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Appendix 1: Interview Guide – Huawei Morocco

Goal of the interview

I am a student on my final year of Bachelor at the HEG of Geneva in International Business Management. Studying in the Emerging Markets major, I wanted to study the success of a China-based multinational company. *Huawei* was the perfect candidate based on their global reach and particular company culture / philosophy.

This thesis investigates *Huawei Technologies'* imprint in African global cities. Under the supervision of Prof. Philippe Régnier, Ph.D., I wish to uncover what strategic factors made *Huawei*'s penetration in African global cities (Johannesburg, Casablanca, Cairo) a success. Based on its presence and position of trusted ICT service provider, I also want to understand what risks and opportunities are associated with *Huawei*'s position on the market from an insider perspective.

Conduct of the interview

The interview should last approximately 30 minutes. You will find in the following document the questions I wish to ask during a potential interview/meeting. If necessary, we can treat your replies confidentially, guaranteed by a Non-Disclosure Agreement. If the interview takes place during a meeting, I will ask your permission to record the interview for transcriptional purposes.

The interview is composed of 3 different sections:

1. Knowledge of the interlocutor
2. *Huawei* in the Moroccan Market
3. Opportunities for Growth and Threats for Business Continuity

Contacts

If you have any further questions, do not hesitate to contact me:

✉ daniel.yarden@etu.hesge.ch

✆ +41 79 943 99 85

I would be happy to share my Bachelor Thesis once finished if it is of any use to your organization.

Thank you in advance for your invaluable support and contribution.

Daniel Yarden

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Section 1: Knowledge of the interlocutor

1. *Can you please describe your occupation at Huawei?*
2. *Can you describe your geographical area of operation?*
3. *Can you describe your personal history at Huawei?*
4. *Which business unit do you serve; Telecom, Corporate, Consumer?*

Section 2: Huawei in the Moroccan market

1. *Since when is Huawei actively located in Morocco?*
2. *Where are Huawei offices located in Morocco?*
3. *How can you describe the Moroccan Telecommunication sector?*
4. *Who are Huawei's competitors in Morocco?*
5. *How do you think the Telecommunication Equipment market in Morocco will evolve in the medium to long term?*
6. *What makes Morocco an interesting market for Huawei Technologies?*
7. *How would you describe Huawei's corporate client-base in Morocco?*
8. *What similar characteristics, if any, do you see with other African markets?*
9. *What different characteristics, if any, do you see with other African markets?*
10. *How is Huawei perceived in Morocco?*

Section 3: Opportunities for Growth and Threats for Business Continuity

1. *What opportunities are associated with Huawei's operations in Morocco (from a company POV)?*
2. *What could be threats / risks Huawei would look to avoid on the Moroccan market?*
3. *What advancements are you looking forward to in the medium to long term horizon in Morocco?*
4. *What change (internal or external) could improve Huawei Technologies' operations in Morocco?*

Appendix 2: Interview Guide – GIP Digital Watch

Goal of the interview

I am a student on my final year of Bachelor at the HEG of Geneva in International Business Management. Studying in the Emerging Markets major, I wanted to study the success of a China-based multinational company. *Huawei* was the perfect candidate based on their global reach and particular company culture / philosophy.

This thesis investigates *Huawei Technologies'* imprint in African global cities. Under the supervision of Prof. Philippe Régnier, Ph.D., I wish to uncover what strategic factors made *Huawei*'s penetration in African global cities (Johannesburg, Casablanca, Cairo) a success. Based on its presence and position of trusted ICT service provider, I also want to understand what risks and opportunities are associated with *Huawei*'s dominant position on the market.

Conduct of the interview

The interview should last approximately 15-30 minutes. You will find in the following document the questions I wish to ask during a potential interview/meeting. If necessary, we can treat your answers confidentially, guaranteed by a Non-Disclosure Agreement. If the interview takes place during a meeting, I will ask your permission to record the interview for transcriptional purposes.

The interview is composed of 4 different sections:

a) Knowledge of the interlocutor
b) Telecommunication infrastructure General Knowledge
c) Telecommunication infrastructure in Africa
d) Opportunities and Threats: *Huawei* Focus

Contacts

If you have any further questions, do not hesitate to contact me:

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✆ +41 79 943 99 85

I would be happy to share my Bachelor Thesis once finished if it is of any use to your organization.

Thank you in advance for your invaluable support and contribution.

Daniel Yarden

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Section a: Knowledge of the interlocutor

1. *Can you please describe your role at Digital Watch?*
2. *Can you describe your geographical area of operation?*
3. *Can you describe your personal history at Digital Watch?*

Section b: Telecommunication infrastructure General Knowledge

1. *How can you describe the telecommunication infrastructure field in simple terms?*
2. *How do telecommunication infrastructure deals take place, in general?*

Section c: Telecommunication infrastructure in Africa

1. *How would you describe the telecommunication infrastructure in Africa today?*
2. *How do you think the telecommunication infrastructure market in Africa will evolve in the medium to long term?*

Section d: Opportunities and Threats: Huawei Focus

1. *How do you perceive the rising proportion of Chinese telecommunication equipment providers like Huawei and ZTE in frontier markets like Africa?*
2. *What opportunities and threats /risks could Huawei bring to the African markets?*

Appendix 3: Interview Transcript – GIP Digital Watch

Student

OK, so I am going to run through the questions that I sent you earlier. I am well aware that you're not actually an expert on the African region, so we'll try to keep it quite broad. You can use obviously the similarities that you've encountered and possibly try to reflect that on an emerging economy and an emerging region like Africa. So first and foremost, could you maybe describe yourself and your role at Digital Watch?

Expert

So, I've started more on the infrastructure side of hardware networking. Those types of things dealing with installations in that way. That kind of morphed over time into more like customer engagement, business development within that technology space.

Because of the organizations that I was part of, there has been a lot of interaction with telecom providers and understanding the dynamics within the telecommunications space. Additionally, there's also been a lot of capacity-building work that I've been involved in within the Caribbean region through the organization, *Caribnog*, a network operators group within the Caribbean where we organized different types of seminars.

Sometimes we would be there couple of days or a week away and would be reaching out within the region. Hosting events at different locations. So obviously most of those things are online now over the past year.

But outreach capacity building and research work as well within that space. So this would be going a little deeper into the infrastructure. So there's some overlap with the telecom operators, but then when we're dealing with network operators come fibre infrastructure Internet exchange points. All of those types of things and all of the people and rules have functions in that.

Uh, in terms of what my role at GIP is, if we fast forward?

I function as a curator, so we lend our expertise and being able to track a set of developments that are occurring within different spaces. Sometimes specific to particular geographic regions and in other cases just global trends that are developing and morphing. So I guess that could kind of summarize where I am and the many things I did.

Student

Awesome, thank you very much for that complete response. So could you describe maybe your personal history at digital Watch?

Expert

Oh yeah, It's been interesting so I have been focused primarily on things specific to the Caribbean region previously and I'm looking at now tracking certain development so anything that is Internet governance-related. Those kinds of things that are useful, the tracker, having impact and understanding, drawing out.

I don't remember the exact years so apologies I'm not able to recall the exact points, but then that morphed into drawing on some of the telecom experience that I have for looking more broadly at what was going on within different regions just within that world space.

There's some overlap and I do have a specific focus on the Caribbean still, but there's also a lot more looking on tracking of things globally and just kind of appreciating where things will be going forward.

Student

Awesome, thank you very much. So how would you describe the telecommunication infrastructure field today in very simple terms? I'm not looking into technicalities.

Expert

I think the best way to describe telecom and the telecom infrastructure space is to think of a large network of roadways, let's say like maybe the autobahn or if you think of the United States and their highways.

Because what the infrastructure is supporting is life for the certain stuff that is in place. At one level the physical infrastructure or the fiber optic cables, that they've been relay points to allow them to then run to different locations.

All of that is just capacity, but then when treated with relevant policies among other elements allows content providers to draw value out of the roadways that have been established.

If you have no roads, then there's a lot of things that you cannot get done. Even if you have roads, you need to have good roads and wide enough roads, which is why you need more and more capacity to deal with the traffic.

Look at what has been going on also. The whole covid impact and the lockdown period sort of rolled across the Earth. Yes, I know a lot of territories are getting back on their feet but this period forced telecom providers to be managing and treating with a more demanding infrastructure than ever before all at the same time, in a very compressed manner.

So what does telecom do? Support the ability to get things done. We talk about a lot of digital engagement, being able to manage several things digitally but without the infrastructure being in place and sufficient infrastructure being in place, a lot of things cannot happen, so this is what fibre this is what satellite communication, all of those things that can support the transmission of value.

Enhancing value, and encouraging creativity are what we're trying to get done and so there is a whole world there for software development. Applications that can be developed, services that can be developed to drive a set of new engagements and new possibilities.

But at the end of the day, the data must be transmitted over something, somewhere along the lines, with some device that is capturing and then being able to transmit. But if we don't have sufficient infrastructure, that will be something that needs to be constantly updated. And also, looking forward to the future to handle new levels of demands, you will inevitably run into a wall so to speak, where the demand outweighs the capacity if you don’t constantly update.

I know it was a long description, but I hope that helps.

Student

It's perfect, honestly. And as you've been involved in the telecom infrastructure field as well as being involved with actual telecom operators, would you know how telecom infrastructure deals take place in general?

Expert

it depends on the specifics of the infrastructure because, for example, you could have as much cable being landed at some particular territory as you want. You will still then, if you don't have sufficient cooperation that's between operators and those that own the different cables or different infrastructure, so that data could be transmitted between; this would be internet exchange points which I assume you have some familiarity with.

If you don’t have that on top of the server that would have already been in place, you still will see that economics, at some point in time, will just not be scalable.

So just let me ask so that I know if I should dive into it. In the research that you're doing, are you looking at Internet exchange points as well as part of the infrastructure or you were looking more specifically into cables, satellites?

Student

I am less focused on the technical side so I'm way more on the strategic side so more on the economic side. I'm specifically investigating, Huawei's role and Huawei's imprint on the African data communication landscape basically, so I'm not really focusing on, as I said, the technicalities but more on the strategy itself: Where thee deals are made, whether through government agencies or by, I don't know, the telecom operators trying to push for more advancements, or is it the provider?

Expert

Oh, it is a combination! Because you see in different territories. Like if you think back, in a lot of cases there would have been some specific turning point when there was deregulation from a telecom standpoint and territories have moved from having single operators; most cases were one major dominant player and then you have this landscape that has changed and opens up opportunities for several other operators to jump in. Whether they are rolling out infrastructure themselves or if they're doing some kind of shared services.

Either way, dependent on the specifics of the regulatory environment, combined with some geopolitical stuff, which I mean we can't avoid that, determines them how much leeway the operators themselves have, and being able to strike deals and to do things.

In some cases, it's just pure competition. In other cases, it would be a legacy operator who's trying to branch out into something new and they still have a heavy government presence or partial ownership, which then leads to some potential conflict of interest situations, let's just say that, broadly.

But it also impacts in terms of how competitive the environment itself is, it's not a cookie-cutter kind of situation, it really will be dependent on the landscape as well as how forward-thinking the particular administration or the government that is in place within a territory is over a region and their understanding of the role of ICT's and what their vision around the development of their people utilizing technologies.

Student

OK, awesome. And so if we move now towards the African perspective based on your knowledge, how would you basically describe the telecommunication infrastructure in Africa today?

Expert

I would say that there are specific regions where it is quite well, as in well-developed or developing at a fair enough pace and in other areas where there's a lot more that can be done. Especially in some of the landlocked areas where they don't have ports for people to actually land or trade. They are dependent on their neighbors for the relevant infrastructure to be able to get certain things done.

So it's a mix, but it's also kind of dependent on the, not regulatory as much as how much on the content provision side is there, like indigenous content creation occurring or that kind of capacity that has been built up to leverage infrastructure.

It's more about: "Are we rolling out enough fibre?", "What internet speeds are there"? how much has been transmitted between looking at some of the demand from the devices?

But if people aren't actually using some of the additional capacity to deliver new types of services, then certain things aren't going to grow up particularly and drive more demand for the infrastructure being put.

So it's in development. I'm not an expert on all of the specific areas within the African continent, but just as I told you I'm tracking, I'm looking at so many similarities between the African region and Latin America.

You see those same kinds of trends on this side as well. Depend on the policies, dependent on the understanding dependent on the capacity development and securing dependent on the universities and research that is coming out and driving certain things and as well as just the business environment. So it really is a combination of things that will determine how much the infrastructure itself is being developed, transformed, and moving into growth.

Student

OK, and how do you see that landscape evolving in the medium to long-term horizon in that specific region?

Expert

My expectation is that there will be greater and greater demand for digital services from the African continent. Lots of it is going to be wireless base, because of the topography, and some of the challenges with rolling out certain types of infrastructure.

But the thing would be that more and more people and work has been done at many different levels to drive more accessibility so people, regardless of their region, rural or not, so that combined with some of the economics where things are becoming a lot cheaper, I expect that there will be a return greater development within the region within the medium to long because.

I can't say for sure for every country, but I don't think there's any administration that is in place now that is only thinking "we will stay as is now and not leverage digital services".

My expectation is that it is part of the agenda for everybody, how they will make certain decisions, policy-wise to determine what they allow and what they will not, will be specific to the administration, politics, and that kinda stuff, but my expectation is that everybody wants to leverage more and more technology because everything has been pushed into that direction, the question would be how to do it and gain as much value. How to do it safely as possible and how to make sure that the people develop it as much as possible.

Student

And so you were talking about the challenges of topography and the remoteness of communities. And of I mean the countries themselves. What other types of challenges are you seeing that could be faced by the telecom infrastructure sector in Africa? And you can draw parallels with Latam as well.

Expert

So, I would say, you can say my expectation is that it's a challenge in all of itself, and that, a lot of times people don't appreciate some of the dynamics within an ecosystem that needs to be developed. Both on the business size as well as on the technical side.

Right, so I'll give an example of something that I always found to be interesting and I never saw it be as successful anywhere else, even though they weren't using very very sophisticated technology. But they were able to drive and deliver value. The example would come out of Kenya's M-Pesa. This was using SMS, and SMS is not something that is all fancy and a lot of graphics, etc. The point was a lot of people who are unbanked that needed to be able to engage digitally to some extent to get resources exchanges. It was most interesting to me, and this is going back years ago, has have been when people moved from having the consideration of their salary go to the financial institution or having their salary actually go to the type of provider so that they could draw down and then do all of the exchanges.

And this is like SMS, we're not talking about digital payment systems like PayPal or some other Square. This is using SMS, something that is simple, in place for how many decades now, but they were able to deliver their service and meet the need in that territory and it's a fairly large place, same issues with rural and those kinds of things.

So to me, it always then comes down to: "Are you trying to over-engineer the problem or originate a solution?", or are you just looking at what are the core things that need to be actually delivered and provided and then well, "What do we have?" and "Does what we have work, even if it's not the fanciest thing, but it's delivering the value?". OK, you can't say that they did not have a digital payment system in place, they did. It may not have been as sophisticated as other types of things, but that doesn't matter. We had a lot of people who ordinarily would not have been able to access. It would have been a lot more challenging for them to get goods exchange, but they were able to in this case.

I was never said replicated elsewhere with the level of success. And many people tried, but the issue wasn't whether you use this technology or that, it's “Are you solving the particular problem and delivering services that would enhance the lives of everyone?”

Within the Caribbean region and in Latam. They’ve been versions of that that have been attempted on both using SMS technologies and applications that would actually require to be online, but a challenge that we never considered in the region specifically was that even though there was a lot of handsets mobile, handsets in place, there wasn't a lot of Internet penetration, the data services never got to that level. Well, at least not in any way equal to the number of handsets and smart devices that are actually necessary, and so some things could not be delivered and you always run into this within the constraint.

So, I believe that there are lots of times when things don't go a little further because we're trying to bring solutions in their kind of form and superimposed on the regional, basically adapting it to make it most relevant. If it's not in place within another territory then you may try to do the very same thing exactly as you've seen it, but it may not work just because it has another infrastructure that is not adapted, but there may be some interest in ease of doing business in itself.

So, for some things really to change and develop, you need to be looking at them in a holistic way.

I mentioned *Caribnog*, where we were doing research some years ago.

We were doing some research in terms of Internet exchange deployments and how the deployment of an exchange is supposed to facilitate certain types of services. What you would have seen is that if you did not have other types of policymaker engagement and things in place, additional stakeholders and all you would have is a nice fancy switch and nobody utilizing it to do anything.

You don't need the most sophisticated thing always from a technology standpoint to address the needs. You need to get a sufficient case and enough other supporting infrastructure, like scaffolding, connected together so that they can be in some initial advance and then you enhance and enhance and that's kind of how I'm looking at.

Student

Absolutely, and it's funny because as I was listening to you, I was really recapturing what were my findings in thesis, and the fact that it's interesting how Huawei has really been

able to actually understand that aspect of appropriate technology in the sense that they're very, very highly developed in terms of R&D, they're setting up patents left, right and centre, and they still manage to reach really frontier markets. And that's just because they bring appropriate solutions that are viable and that are really adapted to the region at hand, and so that brings us to the next question which is. How you personally perceive the rising proportions of, not only Huawei but these Chinese telecommunication equipment providers in frontier markets like Africa for example.

Expert

How do I personally perceive it? That's a trick question. I think that, It is to be expected that you would see this kind of involvement.

If we look at it without getting too deeply, into the geopolitical scenario. If you look at the interplay between the major powers from an economic standpoint, a political standpoint. The reality is that people align with somebody who is some type of benevolent benefactor in some way, they're providing some kind of help.

And dependent on what is a major focus… Some regions of the world determine whether people, may feel disenfranchised or they're looking for additional opportunities, and I think what has happened within Africa has been a version of that system. There haven't been extremely extensive efforts that focus on developing the entire region significantly. So you know there be pockets with certain types activities, in the mining industry and the extractive industry for example.

But dependent on the administrations in place, regardless of the specifics of their policies, and their level of understanding of building their nation and that kind of thing would have determined whether they made a sort of short term or short term-medium term decisions on whether certain things were beneficial over the long term.

So, if we look back at historically, the Chinese have had more very, very long term approaches to certain types of negotiations. Yes, even though it's on a different basis, there it's not some new revelation that people will be stumbling upon.

And so Africa is a region where there are a ton of countries, lots of resources, but also lots of young persons that would be part of the new generation growing populations who weren't followed, and so I think there has just been a very, very specific focus and on building the relationship to debut within the African region and along with that would come, well, "these are all infrastructure providers, these are all vendors and so we want

certain types of assistance then we would expect that you would look favourably upon these providers". And that's not something that is specific to Huawei, ZTE. Those are things that would happen, of course, so that's just the way of doing business.

The thing that has been more concerning, this is from the Western world, is that we are not as familiar with the Huaweis and ZTEs of this world. Because of the lack of familiarity, there may also be measures of distrust and things to work through just in terms of how genuine they are in certain types of … I'm trying to be as broad and very nonspecific as possible (laughter).

Because, at the end of the day, I am not surprised. I expect that because if you're thinking about countries that don't have a lot of benefit from the resources that, let's say, they naturally accrued, their populations are not benefiting and believe they will make the best deal that they can see at that point in time.

And so you once it's in levels of infrastructure and "please just support the same young people that you want to be digitalized and give a way to be able to drive the economy, grow things". And so it's not surprising, and especially if somebody is offering to provide it, sometimes like no to low-cost upfront or certain types of arrangement that are fairly attractive. And if those are the types of things presented before you when you are considering a set of demands on the resources that are available. I can see how those decisions would be easier to arrive at.

The question then would be when you have some of the pressures that we have seen or witnessed over the last few years in terms of those companies being able to upgrade and being denied access to sit in other countries. And you know that kind of thing.

Well, what are we going to arrive at what?

Because at the end of the day, infrastructure is infrastructure. A lot of research as you have said that they have been doing. They've been pioneering in a set of different needs and is it beneficial to deny yourself access to 5 and 6Gs from an infrastructure standpoint?

I'm not saying: "Don't have concerns around security", that could be foolishness. Or there's a balance that we need to find, and I don't know if we have the balance point. I think we're kinda leaning a little bit more … this is you ask, implicitly, I'm not getting too much into this.

I think that we do need to appreciate: "Are we going to be setting ourselves?" This is globally. "Are we going to be setting ourselves back by not being able to leverage certain

levels of technology and letting them for other vendors who would not have been advancing as much?". "Within the time we should take to catch up, what would we have lost?"

I don't know.

Student

That's a very interesting question that we could ask ourselves. Obviously, we don't have the answer. Maybe as a closing question, what type of opportunities, we may crossover with the previous question, but what kind of opportunities, maybe threats for a region like Africa with Huawei's growing involvement. Because I've read figures that they're at about 70% market share in telecom infrastructure in Africa alone, which is just a mind-boggling number in my opinion. From my standpoint, it is curious to see such a dominant position because I wouldn't expect that to be something that in our Western world. That that was actually my drive to actually try to understand why and what made that happen so, what kind of opportunities, and what kind of threats are you seeing for the African region when you consider Huawei's involvement?

Expert

My position is that competition is always better than monopolies. Consumers will always benefit most when there is a decent enough level of competition.

When you don't have that, like if we take it back to cable and wireless days when they were the dominant infrastructure, or you think about the time in the United States when Mother Bell under AT&T was this behemoth it's a similar thing. It is good to grow to a large amount from an economies of scale standpoint and being able to provide this service so costly, driving cost down OK great, but the service level never increases as the size grows out. You always end up with the expectation that people will not abandon the particular service provider, so there's this bit of lethargy with certain.

When they started off … and I mean it would be good probably to look back at some of the early periods and the deals that were made from a Huawei standpoint, because there are so many big deals that they first landed, to see how aggressively they were growing across the region before they came to that tipping point, where you know, you are the dominant player, the question would be: With constraints that they're facing in some of

the territories, are they going to try to lock up the rest of the region and just hold on in a particular way? You know, like this is their bastion, they don't want anybody coming in.

Which one would be beneficial to them from a protection standpoint as opposed to being beneficial to all? To me, a big threat is the monopolistic type of behaviour that you start seeing once you get to a certain level. To me, 50%, 40% market share should be OK, and you have another major player. And in a way, they're driving towards delivering more services.

Which leads me to opportunities. From an opportunity standpoint, when you have that level of dominance, you can deploy your technology across the board. And because of the fact that their technology would be across the board, that level of seamlessness should allow for providers who don't want to care about the specifics and the infrastructure.

It's just like in software development space, come a point, there was a lot of you know Windows development, Linux, but there was a point when web development was a significant thing and nobody wanted to care about the specifics of what was going on in the background. Let that be a black box and you have web services in between them. Once we understand protocols, whatever is happening behind them, it doesn't matter. "I know how to engage with this thing", and I believe that there is that opportunity for that type of grid development to occur. If there's been a lot of capacity building going on across the Africa region in terms of coding camps and that kind of stuff, helping young people to be looking forward in a particular way and the digital skills that are required. That being combined with a lot of good infrastructure being in place, I believe in itself is a significant…it's a melting pot that could be steaming with opportunity for things to occur.

You really just need young creative ideas, and in fact that stuff is accessible allowing them to be trying new things. So I think that is a significant thing, and I'd like to see that kind of thing increase while at the same time reducing the dominance itself.

At the end of the day, we as humans have always been able to gain value from generic things. If we look at it in a creative way and so, I'm looking to see new types of mashups. Let's say from a technology industry and other types of digital services.

And even the creation of subsets and new types of things because there will always be more that we can do. That's just the nature of synergy. Bringing things together in a particular way, and then you create the opportunity for other things that nobody had ever thought about before to be possible, to occur and somebody just needs to see it and have the ability to go after it.

So driving down the costs, making infrastructure as easily accessible, not having to think about all of the drama, having more and more capacity available, and having a population because I don't remember the specific stats, but I believe from what I remember reading in some articles about the Africa region that the number of young people is ridiculous in terms of how much they represent in proportion, it's crazy.

So we should see that level of entrepreneurial activity, whether they're doing it from a. Social entrepreneurship, you know, developing a set of NGOs. It doesn't have to be always from a for-profit standpoint. But it's driving more and more development and that's what I'm kind of looking at.

Student

OK, so if I were to sum it up, I think in a very rough way, so we'd say that obviously the threat is that hegemonic status of that monopolistic side that really kind of eats up the markets and basically nullifies competition and in a sense puts innovation at risk, even though Huawei has been showing good signs of innovation.

And on the opportunity side, it's really about trying to take advantage of that position from a Huawei standpoint and try to really build up capacity throughout the community. They've done actually quite a good job on the training center side, so they've built up training centers. They're also teaming up with universities I've seen, so they're really focused on trying to engage people and to actually do a bit of collective thinking and trying to work things up and try to basically build up some chemistry with the communities around those regions to actually build up capacity, build up the knowledge to tackle the challenges of tomorrow.

And that's obviously great. But it is a very interesting topic, and actually everything that we've we've discussed so far is really the essence of what I've what I've read and what I've researched. So it just really helps me to confirm my hypothesis. As well as having the privilege to have your point of view as well in order to gain a bit of credibility.

So yeah, honestly, it's been a wonderful exchange with you. I really want to thank you for that. I've really pressed you quite heavily on deadline, I'm afraid. I going to b long nights before I get done with it. So I appreciate you giving me some of your time, your expertise. And if you have any other questions, I'd be happy to answer.