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The role of Industrial Clusters in the development of African countries

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Abstract

According to the World Bank Organization, four of the fastest growing economies in the world in 2019 are in Africa (i.e. Cote d'Ivoire, Ethiopia, Ghana, and Rwanda) and growth perspectives in the continent are positive. African situation and recent developments are presented in the first part of the paper: although the continent is becoming more dynamic, various issues are slowing down growth speed; problems such as raw material dependency, random and unpredicted development, low degree of innovation in all sectors, massive use of endogenous capacity and social problems due to over-urbanization. The aim of the paper is to understand if Industrial Clusters policy could be a key determinant of economic growth in the continent, as Industrial Clusters boost and enforce development, by improving economic and cultural dynamism in entire regions. As it happened in the past in North America, and more recently in East Asia, through Special Economic Zones (SEZ), implementing Industrial Clusters Policies is a way to overcome problems and to accelerate economic growth. The paper analyses some case studies of industrial clusters in the African continent then compares their situation and features with theory and with other recent realities all around the world. The analysis leads to some conclusions on which are the regions with better growth potential within the African continent and if industrial clusters policies can be an effective tool to increase their development perspectives.

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List of Abbreviations

AEC: African Economic Community
AfCFTA: African Continental Free Trade Area
ARC: Agricultural Research Council
ASEAN: Association of Southeast Asian Nations
AU: African Union
CAPDAN: Computer and Allied Products Association of Nigeria
EAPD: Economic Analysis & Policy Division
ECI: Economic Complexity Index
ECOWAS: Economic Commission of West African States
FDI: Foreign Direct Investment
ITTU: Intermediate Technology Transfer Unit
OCV: Otigba Computer hardware Village
REC: Regional Economic Community
SAWIS: South African Wine Industry Information and Systems
SDG: Sustainable Development Goal
SEZ: Special Economic Zones
TCC: Technology Consultancy Center
UN: United Nations
WOSA: Wines of South Africa

Introduction

Africa is the second larger continent, third if we consider Americas as a single, but the last one in terms of economic development. However, according to the World Bank Organization, four of the fastest growing economies in the world in 2019 are in Africa (i.e. Cote d'Ivoire, Ethiopia, Ghana, and Rwanda) and United Nation reports that growth forecasts are positive for 2020. The overall economic result of the African continent is a consequence of different performances, development speeds and government commitment in structural changes. As a consequence, poor economic performances of bigger economies mask stronger performance in several smaller economies that continue to grow steadily. The aim of the paper is to understand if Industrial Clusters policy could be a key determinant of economic growth in the continent. African situation and recent developments are presented in the first chapter. At first, the continent is divided into five different regions; each one will be illustrated, with a specific focus on economic factors. After specifically examining the difference in economic performances, main economic, demographic and political factors are deployed. The observations of the continent move on with a focus on the main problems emerged in the first part of the study Thinking about Africa, it can not be ignored that in some areas people face everyday problems concerning wars, social disorders, extreme poverty, lack of food, lack of minimal care, expanded diseases, malnutrition. Although these are serious problems, the analysis aims to underline the multiple structural problems of the economy. Furthermore, the first chapter end with recent developments and general conclusions about the African continent. The continent is becoming more dynamic, institutions gaining importance in the international environment and some country showing incredible growth speeds. However, various issues are slowing down growth speed; problems such as raw material dependency, random and unpredicted development, low degree of innovation in all sectors, massive use of endogenous capacity and social problems due to over-urbanization. These issues imply two main structural problems: lack of innovation and lack of economic diversification. Several researches showed over the years that Industrial Clusters permit to boost and enforce development in entire regions, improving innovation capacity of firms and cluster's actors. Innovation brings to economic and social dynamism, that can spread its benefits in different related sectors, augmenting diversification. Industrial clusters theory developed in the 1900 by observing successful agglomerations of firms, especially in Europe. Accordingly, the second chapter focuses on different theories that gave birth to the definition of cluster and that tried to understand the

mechanism through which development is created. In this chapter, different views are presented: the Marshallian Trinity, Krugman's New Economic Geography and Porter's diamond of national advantage are the main theories explored. All these theories, with some points in common, leads to the idea that agglomeration economies are a tool for economic development, as later explained in the third chapter. The third chapter focuses on this mechanism and continues with further important aspects to consider concerning industrial clusters, i.e. economic complexity and the role of institutions. Finally, positive factors for industrial cluster success are explained. The main positive conditions for cluster development are, for instance, collaboration, product and network complexity, coordination, sharing culture, skilled workers and cluster geography. As it happened in the past in countries in Europe, in North America, and more recently in East Asia through Special Economic Zones, implementing Industrial Clusters Policies is a way to overcome problems and to accelerate economic growth. With this premise, the paper continues by analysing some clusters in some of the major economies in the continent. Chapter four analyses some case studies of industrial clusters in the African continent: Silicon Savannah (the new innovation hub in Nairobi, Kenya, East Africa), Suame Magazine (automotive cluster in Kumasi, Ghana, West Africa), Otigba Computer hardware Village (the ICT cluster in Lagos, Nigeria, West Africa) and wine cluster in South Africa (meaning the wine industry in the country, Southern Africa). After having illustrated the clusters and their features, each African case study is analysed. At first, industrial cluster theory is used, especially with the tool of the Porter's diamond. Secondly, the main results are briefly compared with different clusters around the world, in both developed and developing countries. The analysis leads to some conclusions on which are the regions with better growth potential within the African continent and if industrial clusters policies can be an effective tool to increase their development perspectives, as well as which are the main challenges for them.

Chapter 1

Economic and Social Situation of Africa

1.1 An Overview of the African continent: Different Regions

According to the World Bank Organization, four of the fastest growing economies in the world in 2019 are in Africa (i.e. Cote d'Ivoire, Ethiopia, Ghana, and Rwanda) (www.worldbank.org/en/region/afr/overview; last updated: Oct-15-2019) and growth perspectives in the continent are positive. Within Africa there are multiple areas in which physical geography, resources and human geography are different. Due to the dimension of the continent and to the variety of different characteristics, it is useful to divide it into different subregions. From a geographical point of view, Africa has eight major physical regions: the Sahara, the Sahel, the Ethiopian Highlands, the Savanna, the Swahili Coast, the rain forest, the African Great Lakes, and Southern Africa (www.nationalgeographic.org/encyclopedia/africa-physical-geography). Each of these regions has unique animal and plant communities, as well as populations, economic factors and cultures. However, there is not a unique way to divide the continent. The majority of studies divide the continent into five subregions, with little dissimilarities among countries attributed to each subregion. Moreover, African Union, the continental union promoting Africa's growth and economic development, also provides a division of Africa in five subregions, although it recognizes the existence of multiple trade and economic regional agreements (i.e. n. 10 Regional Economic Communities in 2019). In order to have a clear division, the continent is divided using data developed by the United Nations in their annual report: "World Economic Situation and Prospects" developed by EAPD department of United Nations (www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2019_BOOK-web.pdf; Jan-19-2019) as it studies the different areas analysing the situation in terms of development and SDG (i.e. Sustainable Development Goals) improvement, comparing results from year to year. SDG are the goals settled by UN in its 2030 agenda for sustainable development and they cover several aspects such as eliminating poverty and hunger but also economic growth and industry growth, innovations and improvements in infrastructures. Using UN data permits to obtain a dynamic overview of the continent and the changes in the situation of its subregions, with an up-to-

date database. These regions are five and divide the continent in a similar way as the one used by the African Union: East Africa, North Africa, West Africa, Southern Africa and Central Africa, which main features, with data primarily derived from United Nations, characteristics and issues are examined in this chapter (see appendix 1 for a more detailed overview of the countries included in each subregion).

1.1.1 East Africa

East Africa is the most promising area of the entire continent, as it is the fastest-growing subregion, with a 6.2 per cent growth rate observed in 2018. In general, this subregion benefits from improvements in economic and social stability, new investments opportunities and incentives from development of new industries. These positive factors are driven by government investments in infrastructure and increasing domestic demand. Notable have been the breakthroughs of Ethiopia and Kenya, which largely increased their government expenditure in infrastructures, and a rapid expansion is observed in constructions, real estate and retail sectors within the countries. In particular, Kenya have recently demonstrated to be able to thrive tourism, agriculture, logistics and telecommunication (www.clustercollaboration.eu/news/nairobi-innovation-week-brings-kenya-under-spotlight).

Other positive factors which need to be mentioned to understand how is the situation in this area are the new oil and gas explorations, which increased the availability of natural resources; favourable weather in last years, which helped agriculture that remains one of the main sectors in the area; and the positive role of institutions, that are actively putting efforts in order to enhance integration among different communities.

Growth prospects are therefore favourable, but while overall growth rate is positive and robust, looking at per capita data growth reveals to be not inclusive, and this is one of the main issues faced by East African countries. In fact, while overall GDP growth rate reached 6.2 per cent in 2018, GDP per capita growth rate was only 3.3 per cent the same year. Forecasts in 2019 do not show a substantial change in this sense. For example, Ethiopia that is the larger economy in the subregion, is ranked only at the sixth place in terms of GDP per capita; considering that its population counts for one fourth of the entire population within the subregion, the result looks even worse. As a general assessment, what has not been registered in all countries throughout the years, are real efforts and improvements concerning

income distribution. Last studies, in particular those developed in 2015, showed that 20 per cent of highest earners in the region receives profits for 48 per cent of the total income, while 20 per cent of the lowest earners receives only the 3 per cent of the total income. These data are not significantly different from those registered in 2000. The reason why the distribution of income is so unequal lies primarily on the structure of the economy and on the level of development of the different sectors.

Agricultural sector, in fact, remains the dominant economic sector in terms of employment, in which workers medium wage is low. In addition, other issues are specific to some countries; for example, the largest decline in GDP per capita has been registered in Burundi, where the already poor economic growth and development is worsened by years of conflicts, that submerged the country in a deep socio-political crisis.

Another issue is that countries in the subregion register a high level of fiscal deficits spread throughout all the countries in the area. So far, this deficit has been balanced by external financing, such as the ones from China. Although it is important for the continent growth to attract Foreign Direct Investments (i.e. FDI) this situation causes the risk of debt distress. In fact, another weakness of East African economies is the strong dependence from external factors. As shown, these are source for economic growth and renewable dynamism, but factors such as dependence on commodity prices, US monetary policy affecting debt and deficit conditions, dependence from international funding, make situation less stable for economic growth.

However, the situation is gradually positively changing, due to continuous efforts in expanding and improving economic diversification, starting from the industrial sector. The main example is Rwanda, that put in practice a policy framework that focused in value addition for the already exported products, transforming itself to a regional hub focused on professional business services production (OECD/WTO, 2019). In Rwanda case also regional markets have played an important role in sustaining Rwanda's diversification efforts (OECD/WTO, 2019). Moreover, in terms of annual increasing, service sector is currently the one that is having the largest growth. As will be explained in chapter three in this paper, economic diversification and complexity are important elements for the development path of a country.

As already mentioned, institutions are having an important role in the development of the area, improving regional coordination and constructing important infrastructures which are indispensable for growth. Nevertheless, even if the overall political situation appears to be stable, political uncertainties in larger economies, such as Ethiopia, drive down growth perspectives. In addition, strong conflicts in Burundi, Democratic Republic of Congo, Somalia and South Sudan create insecurity and political tensions, hindering international development assistance effort.

1.1.2 North Africa

North Africa shows to be another promising subregion, primarily because of favourable external conditions. In 2018, overall growth rate was observed to be 3.7 per cent. In general, growth is driven by improvements in tourism revenues, increasing commodity prices and rising in agricultural production, as well as increasing domestic demand in some countries.

More in details, Libyan growth rate, which was 11 per cent in 2018, is driven by crude oil production, while the domestic demand remains weak. A consistent economic expansion is observed in Algeria, which experienced a growth rate of 2.7 per cent in 2018, due to higher oil and gas production. Opposite situation is noticed in Egypt, where GDP is expected to increase in 2019, more than in 2018, primarily because of the increasing in private consumption, which increases the domestic demand. Morocco is experiencing a weak but healthy economic expansion. The results are worsened by the decreasing in agricultural production but the positive factor, especially in the medium-term, is the continuous increasing of domestic demand. Tunisia benefits especially from tourism and industrial production, but it has a serious issue with balance of payments, situation caused by its inability to produce enough capital to finance debt. More in general, government is engaged in ongoing reform measures that improve the growth forecasts in 2019.

While most of the countries in North Africa are taking advantages from internal and especially external factors, also in this area there are some extremely negative events. In particular, situation in Mauritania is tragic. The country is plagued by deep poverty conditions and, although it is rapidly growing (growth rate is expected to be around 5.1 per cent in 2019), this is not sufficient to eradicate poverty, which is also worsen by rapid desertification and urbanization.

Even if multiple factors are favourable, growth rate is expected to slightly decrease from 2018 to 2019, forecasts for 2019 are around 3.4 per cent. As in other many cases in the continent, generally the development in this region is triggered from strong structural vulnerabilities. First, many countries have weak fiscal and balance of payments positions, especially for Egypt, Sudan and Tunisia. The worst situation is noticed in Sudan, which is under serious balance of payments constraints, factor that is leading to a deviation of national currency and inflation rate reached the 64.1 per cent in 2018. This critical situation leads to constraints in the possibility to use monetary policy to boost growth as the fiscal spending is focused on fiscal consolidation.

Second, government revenues are insufficient, and they still need to be increased especially in Egypt, Morocco, Sudan and Tunisia. As a consequence, the major policy challenge in North Africa seems to be the fiscal consolidation. Shifts in composition of fiscal spending are strongly needed as a structural adjustment, as fiscal spending needs to focus more on social issues and poverty alleviation.

1.1.3 West Africa

West Africa experienced a growth rate of 3.2 per cent in 2018, but, more than in other areas, persistent vulnerabilities may affect the recent growth impulse in this subregion.

In particular increasing revenues in this subregion are driven by the Nigerian economy, which alone covers the 70 per cent of the regional GDP. Recently, Nigeria has had a sluggish performance, but it is expected to become stronger again in 2019. This fluctuating trend is due to the decreasing and increasing in oil revenues, because Nigerian economy is based in oil prices and exports revenue. This diversification problem is the same as observed in other areas in the continent. This issue can be reduced by a recent raising of manufacturing costs in China, which represents an opportunity for the development of manufacturing and industrial sectors, in this region as well as in other parts of the African continent.

As already stated, West Africa has positive growth prospects. In particular, increasing importance of services sector in most countries, buoyant markets for commodities (i.e. both mineral and agricultural), stronger private consumption and enhanced investments in infrastructure are some of the most important factors that are important for the recent development. In addition, a slightly growth acceleration is expected in 2019, as a result of increasing domestic demand, improved terms of trade, more capital inflows establishment

of new specific SEZs (i.e. Special Economic Zones) in Burkina Faso, Cote d'Ivoire and Mali, and because of a new agreement called AfCFTA (i.e. African Continental Free Trade Area). These last factors will be analysed later in the paper as they are important political events for the future of economic development in the continent in general. In addition, Cote d'Ivoire and Ghana are among the fastest growing economies in the world (www.worldbank.org/en/region/afr/overview, last updated: Oct-15-2019). Ghana is showing positive perspectives as the country is improving its economic and social conditions. From an economic point of view, Ghana's economy continued to expand in 2019, including a consistent reinforcement of non-oil sectors growth. In particular, growth was driven by a strong recovery in the services sector which grew by 7.2 per cent in 2018 (www.worldbank.org/en/country/ghana/overview, last updated: Sept-26-2019).

As initially stated, structural vulnerabilities mine the region's growth, because they expose countries to several risks. In the short-term, as already observed, a change in oil prices is a key determinant for the economic performance of the entire region because Nigerian economy is based oil and gas exports and the Nigerian economy itself covers the great majority of the regional revenues. Lack of other strong economies and such a strong dependence on oil prices is a cause of spread vulnerability.

In addition, as agriculture remain the predominant sector in most countries, weather related shocks can cause serious problems, worsen by the inevitable consequence of increasing in the price of food, with the result that a lot of families can not even afford to eat in some period. Food emergencies noticed especially in some areas are worsened by the security threat, especially in the Sahel region. As observed by several organization, such as FAO with its last report in august 2019, food insecurity and malnutrition in the Sahel region are worsen by several conflicts, inevitably affecting entire communities. In particular they observed the worst situations in eastern and western Niger (i.e. the Lake Chad region), northern and eastern Burkina Faso and northern and central Mali. In numbers, 9.7 million people has been estimated to have been severely food insecure in June-August 2019 across the Sahel region (www.fao.org/emergencies/resources/documents/resources-detail/en/c/1204057/, Aug-2019). Finally, debt distress represents also a real danger for economic stability, as in other subregions, and a source of risk even in the short-term.

1.1.4 Southern Africa

Southern Africa is composed by relatively poor countries such as Zimbabwe, Botswana and Angola, but also more developed ones, such as South Africa and Mauritius. The overall economic situation is alarming because the already relatively low growth rate is decreasing, from 1.5 per cent in 2017 to 1.2 per cent in 2018, and the forecasts in 2019 and 2020 are not promising. This situation is primarily due to the Sub-Saharan countries, that are not able to utilize their growth potential, as well as the poor performance of South Africa, which has experienced a technical recession in the first half of 2018 in all sectors and, alone, it was responsible of the 60 per cent of economic output in the entire region. A slightly positive trend is observed in Angola, the second largest economy of the region, which is slowly improving its economic situation.

Looking at GDP per capita, data show that the situation is even more alarming, because the area is experiencing a bigger decreasing in GDP per capita than GDP in general, especially in countries such as Zimbabwe. The only exception is Mauritius, that can claim a better situation due to offshore financial services.

In general, however, the picture illustrates increasing inequalities. For example, in South Africa, in which the distribution of income is the more polarized, only around the 3 per cent of the total income goes to the 20 per cent of lower earners.

Many problems adversely affected the region. Among the others tropical cyclones in Mozambique and Zimbabwe, and in the entire region growth is also underpinned by increased commodity prices, which the region has to import, and improved need for energy supply.

As a commonality with all other subregions, structural challenges trigger development. In particular, in this subregion these structural weaknesses are represented by lack of long-term government strategies, lack of local capital mobilization, narrow tax bases and low level of foreign investments; all these factors underpin the stability of the economy. Difficulties and instabilities can also raise from bad weather conditions, as agricultural production contributes largely to GDP. Moreover, as a positive element for the economy, in all countries in the area, except for Angola, government debt-to-GDP ratio is increasing. Although this situation, the outlook for fiscal balances is not obvious, but it appears to be mixed: forecasts for Botswana and Namibia in 2020 are positive, while South Africa is expected to have a

stable fiscal deficit but with risks of deterioration due to an already challenging economic situation.

1.1.5 Central Africa

In central Africa, growth is boosted by energy prices and structural challenges remain. Growth rate in 2018 was only 2.2 per cent, but the data is still promising because, the subregion is exiting a period of recession. Growth perspectives are in this sense positive, and several factors are enhancing growth opportunities. These are, for example, the recent recovery in commodity prices, the increasing production in goods such as oil and gas and thus more revenues energy goods, a stronger performance in sectors such as manufacturing, services and agriculture, which makes thinking about the concrete possibility of improving economic diversification. These positive elements, resulting in new investments possibilities, new oil and gas fields and concrete diversification measures, make growth rate expecting to increase to 2.5 per cent in 2019 and up to 3.8 per cent in 2020.

As already found in other regions, also in Central Africa development path hides structural challenges, with downside risks and possible consequences. In fact, a reversal in oil prices will surely imply a slow-down in growth rate if diversification measures are not strong enough to change, at list in part, the structure of the economy. In addition, the risk that the governments are not able to put into practice strong fiscal reforms, due also to the possible deterioration of security situation, which will result in increasing politic instability and social tensions. In an instable economy, donor budget support is possible to be lower-than-expected, thus bringing down overall investments rate.

Risks appear more dangerous because of the structural composition of the environment. Political instability and insecurity are still a problem, this can worsen the already delayed public investments and the weak democracy, with even more fragile state institutions instable business environment. Dependence in commodities and commodity prices lead also to a strong fiscal dependence. In addition, the economic is also very vulnerable to weather shocks, as a result in continuing risks for agricultural production.

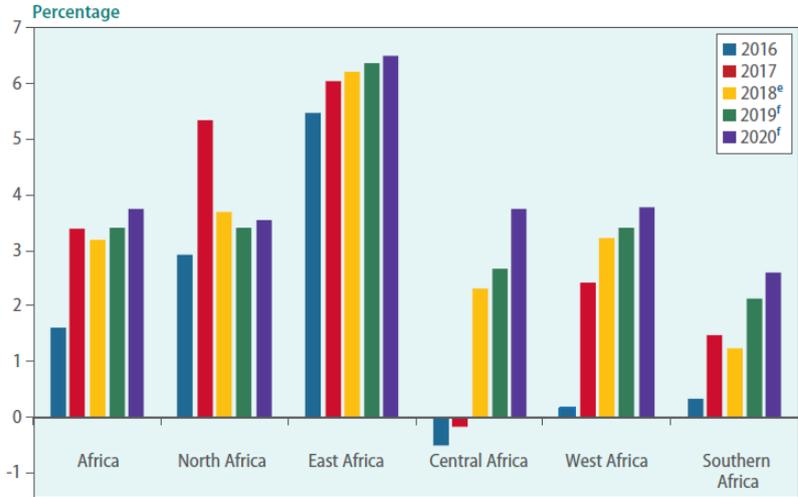
1.2 Economic, Demographic and Political Factors

After the more detailed previous analysis of the different regions, this session aims to give an overview of the entire continent as a whole.

1.2.1 Economic Factors

In wider terms, in the 2019 UN report Africa is included within the developing countries, with slightly positive economic growth rate data and forecasts, from 3.2 per cent growth observed in 2018 to 3.7 per cent expected in 2020. Starting from the economic point of view, looking at the dataset reported by the “World Economic Situation and Prospects” (www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2019_BOOK-web.pdf; Jan-19-2019), growth rates across the continent are slower than expected. Furthermore, World Bank Organization states that Sub-Saharan countries’ growth rates in 2019 are projected to rise to a modest 2.6 per cent in 2019, from 2.5 per cent observed in 2018, which is 0.2 percentage points lower than the April 2019 forecast (www.worldbank.org/en/region/afr/overview, last updated: Oct-15-2019). In their report in November 2019, United Nations depict that the overall global growth slowed from an average of 6 per cent to 4.2 per cent between 2015 and 2018. There are multiple reasons for the negative global trend; among the others, the most evident are the deterioration of investors and consumer confidence due to policy uncertainties, collapse in commodity prices and limitations in innovation and technological capabilities. Looking at Africa data, growth rate is slightly increasing, and the overall growth rate is expected to reach 3.7 per cent in 2020. Concerning the economic situation divided by subregions, already illustrated in the previous session, Est Africa is the one with the most positive growth prospects, followed by West, Central and North Africa. Unfortunately, the slowest growth rates are again registered and expected in Southern Africa, as shown in figure 1.

Figure 1 - GDP growth rates by African subregions, 2016 – 2020
 Source: UN World Economic Situation and Prospects, 2019)



What emerged by the UN dataset based on 2018 and 2019 forecasts data about the different subregions in Africa is that the continent is improving its short-term growth opportunities, with different speeds due to more or less conflictual situation and external positive factors. It also emerged that Africa is growing with significant medium-term vulnerabilities caused by the structure of the economy and institutions. Data illustrate that growth is supported by both external and domestic factors, depending on the area and on its specific features. There are also significant differences among countries in the same subregion, some economies are more dependent from natural resources, others are more focused on export or agriculture. A crucial difference is made by the presence in the countries of more or less active participation of the public institutions and government to the structural changes that in some places are being implemented.

Historically, throughout several decades in the past, growth in Africa has always trended in line with primary commodity prices. For example, real GDP growth peaked at about 4–5 per cent annually in the 1970s and 2000s when commodity prices soared. Output expanded by about 2 per cent annually in the 1980s and 1990s when prices were low. Lastly, in the 2010s, faced with the largest real oil price decline since 1970, African growth fell to 3 per cent annually.

This dependence from raw materials, that continues to be an actual problem in every subregion as emerged in the previous sections, demonstrates the need for structural transformation from resource-based economy to non-resource-based economic growth. The need of diversification in economic sectors is acknowledged but not easy to implement due to lack of strong institutions and powerful legislations. In addition, the lack of international support in this sense worsen the situation. In fact, even in the continent have been involved in several aid programmes aimed also to give assistance in stimulating local economies and reduce dependency, improving diversification and economic autonomy, many experts argue that sometimes this assistance has fostered paternalism, with increasing aid dependency from external countries (www.brookings.edu/blog/africa-in-focus/2017/04/20/making-africa-great-again-reducing-aid-dependency/, Apr-20-2017). During the past years, few exceptions of diversification have been acknowledged in the continent, first in Egypt and South Africa, and more recently in Kenya, Morocco and Rwanda.

The continent demonstrates a robust investments-to-GDP ratio (i.e. 25 per cent in 2018) and this percentage is quickly growing. However, this ratio does not seem to be enough to

overcome the extremely rapid population growth. United Nations stated that Africa needs to double the current growth rate in order to keep pace with the population growth. From the previous analysis, it emerged that Africa needs to attract FDI (i.e. Foreign Direct Investments), more than aids programmes, to overcome lack of funding in many region, that the public expenditure can not provide because of the already overwhelmed negative balance of payments and the lack of strength of certain governments that are not able to put strong fiscal policies in place. According to EY (i.e. Ernst & Young) “Attractiveness Program – Africa”, FDI flows in 2018 remained steady and the ratio of FDI-to-GDP was high in 2019 (EY, 2019). This means that FDI, even if small by global standards, are important for the continent’s economic growth. However, governments should be able to attract more FDI. Being able to attract FDI in developing countries means attracting capitals but also external knowledge. For instance, FDI in industrial clusters in East Asia (e.g. China and Vietnam) have been relevant in providing the external knowledge and technologies and that has been the initial step toward innovation in those cases (Yoshino, 2010).

Brookings Institution underlines how intra-African investment continued to grow in 2018, as a sign of continuing dynamism within the country. For example, South Africa, even if with a weak economic performance and with its structural challenges as emerged in the previous session, remained the most extensive investor in other African countries; Kenya contributed significant FDI to East Africa as well as Nigeria did in West Africa; Egypt and Morocco are major investors in North Africa (www.brookings.edu/blog/africa-in-focus/2019/10/09/figure-of-the-week-foreign-direct-investment-in-africa/, Oct-09-2019). That is, the strongest economies in the continent are more and more involved in investments in their subregions.

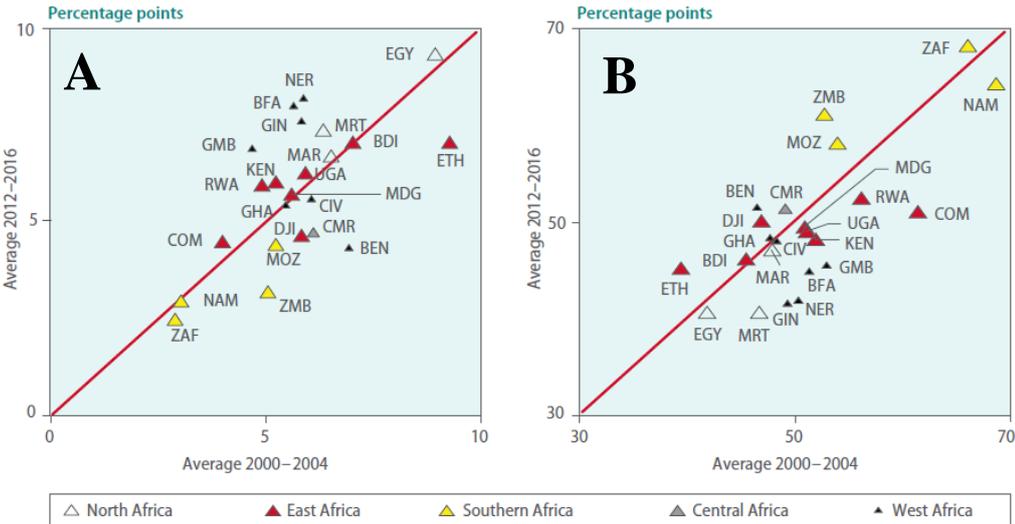
Despite in many countries the fiscal position is not positive, creating problems in financing policies, United Nations on January 2019 reported a positive trend in this sense. In fact, the overall fiscal deficit slightly narrowed in 2018, mainly due to ongoing fiscal consolidation efforts in many countries, and the fiscal position forecasts for 2019 are expected to reflect this trend, supported by rising export revenues, particularly from natural resources, as a result of increasing in prices. However, since the improvement in fiscal consolidation is linked with natural resources prices and availability this could be a relief only in the short-term if structural changes do not occur in time.

As seen above, inequality levels remain high. In fact, only a few African countries achieved significant improvements in income distribution between 2000 and 2004 and between 2012-2016, as can be seen from United Nation data exposed in the following graphs (Figure 2).

Figure 2 - Income distribution by population quantiles, Africa.

Source: www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2019_BOOK-web.pdf; Jan-19-2019

- A. Income share held the lowest 20 per cent earners, average of 2000-2004 vs 2012-2016
- B. Income share held by the highest 20 per cent erners, average of 2000-2004 vs 2012-2016



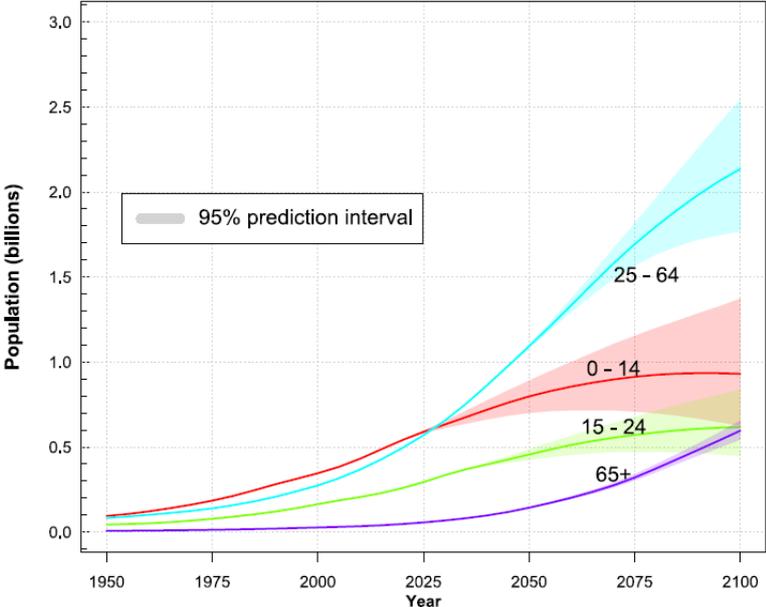
1.2.2 Demographic Factors

United Nations in 2019 defined Africa as the “fastest growing continent” (UN World Population Prospects, 2019). The epithet is primarily due to the last data and subsequent previsions about population growth rate. In fact, population is growing fast in the continent, and as already seen this can be a source of risks, because increasing young population requires more and more job creation capacity; that is, a rapid economic growth. More in detail, UN stated that more than half of global population growth between 2000 and 2050 is expected to occur in Africa.

Currently, Africa is the area where the population growth rate is the highest, and by 2050 the population is expected to double in sub-Saharan Africa, even if in the future there will probably be a reduction of fertility levels (www.population.un.org/wpp/Graphs/DemographicProfiles/Line/903). The previsions are justified by considering the large number of young people currently living in the continent, who will reach adulthood in the coming years, having children and thus strongly contributing to the size and distribution of the world’s population over the coming decades, as stated by

United Nations, Africa will surely play a central role in this sense (www.population.un.org/wpp/Graphs/DemographicProfiles/Line/903). As shown in Figure 3, in addition, population is becoming more and more young.

Figure 3 - African Population by Broad Age Groups.
 Source: www.population.un.org/wpp/Graphs/DemographicProfiles/Line/903



Another important factor is that the continent is experiencing a rapid urbanization, with more and more demographic concentration in big cities. It is estimated that by 2030 Africa will have at least 17 cities with more than 5 million inhabitants (e.g. Nairobi and Lagos) and at least 90 cities with more than 1 million (www.brookings.edu/blog/brookings-now/2019/01/18/charts-of-the-week-africas-changing-demographics/; Jan-18-2019). Urbanization can be an incentive to attract investors, but also a risk for social development if this urbanization is not well managed by governments and institutions. New cities must have basic infrastructures and must offer basic services to people to become attractive. In conclusion, fast growing, young population and rapid urbanization represent both a strength and a weakness for African development and public institutions must be aware of this.

1.2.3 Political Factors

Government has an important role in growth and economic development in every continent. Political decisions and policies, made from the local and the international governments, are able to influence the behaviour of individuals, companies, investors and so forth. The role

of institutions in theory is better described later in chapter three. As emerged from the analysis of the various regions, political instability in zones such as the Sahel region in West Africa and Somalia in East Africa where there are continuous conflicts, underpins growth potentials. The problem of political instability is that it limits the powers of the governments and, as a consequence, policies settled at various governmental levels are less effective or not effective at all. Political instability is due to weak and non-inclusive institutions. In some cases, institutions have been weak during the years and many are the events showing that the continent is still plagued with authoritarian regimes, civil conflicts and human rights violations (Addis & Zhu, 2018).

However, several progresses have been made in this sense. In 2002, in South Africa, an organization called African Union (i.e. AU) was established and then, two years later, AU established the Peace and Security Council with the important objective of resolutions and prevention of conflicts in Africa (Addis & Zhu, 2018). African Union is a continental body consisting in 55 member states (www.au.int/en/overview); its role is not only linked to conflict resolution and prevention, instead AU is in charge of promoting growth and development in the continent, by encouraging cooperation among people and communities. AU works with several regional institutions in conducting its activities. In fact, over the years, before the launching of AU, several regional agreements have been made. In particular, the AU refers to these agreements as “Regional Economic Communities” (i.e. RECs), that are regional groups of African states established to facilitate regional economic integration between members of the individual regions and through the wider African Economic Community (i.e. AEC) (www.au.int/en/organs/recs). RECs are multiple, in particular the one recognized by AU are illustrated in figure 4 (see appendix 2 for more details on the characteristics of RECs).

The increasing interest in organising and cooperate among states in order to overcome economic, social and political problems is a sign that institutions are taking important decisions that will foster political and economic stability. Political efforts in creating conditions for development can be seen also in the establishment of Special Economic Zones. SEZs are demarcated geographical areas within a country’s national boundaries, in which rules of business are different.

Figure 4 - RECs recognised by the African Union.
 Source: the author based on www.au.int/en/organs/recs

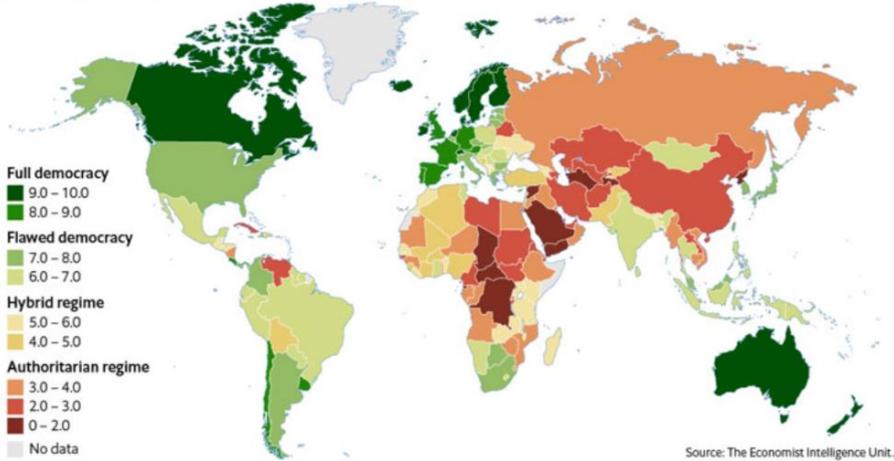


Usually, rules inside SEZs are more liberal (Farole & Moberg, 2017). SEZs can give multiple advantages to economic actors, such as special customs regimes, special regulatory regimes, more quality in infrastructures and fiscal incentives. SEZs have been generally used in public policy especially during 1970s and 1980s in East Asia where “Tiger economies” arose, and in South America. Even with different focuses, they usually have common objectives, such as export promotion and FDI attraction (Farole, & Moberg, 2017). SEZ generated in some cases large-scale manufacturing sectors in economies which were previously dependent on agricultural commodities (Farole & Moberg, 2017) such as in China. From these last considerations, it is clear how implementing regional policies based on the idea of clusters formation also in the African continent can be a great support to improve economic diversification and to create economic and social stability. Multiples tries where made in the African continent over the years, but the results have not been always effective. While SEZs in North Africa are being beneficial in promoting diversification, for example in Egypt and Morocco, in sub-Saharan Africa, the majority of SEZ projects continue to fall well below expectations, with the exceptions of Mauritius (Farole & Moberg, 2017). Another example is the Silicon Savannah in Kenya, a case study that is depicted in chapter four. It needs to be mentioned that practitioners are sometimes sceptical and have concerns regarding this mechanism unlocked throughout SEZs, as they argue that in multiple cases SEZs failed to extend benefits outside their specific territory and to contribute in the upgrading of domestic skills and production base (Kaplinsky, 1993). Thus, while they can be useful as policies to

create favourable condition to cluster promotion, with all their positive externalities, sometimes this positive effect remains inside the cluster.

From figure 5 it can be seen that level of democracy in Africa is not high. In fact, from the Democracy Index 2019 developed by “The Economist Intelligence Unit” (www.eiu.com/topic/democracy-index) it emerged that Africa is primarily characterised by Authoritarian Regimes and Hybrid Regimes, with few exceptions such as South Africa, Ghana, Tunisia, Botswana and Namibia, where flawed democracies have been established.

Figure 5 - Democracy Index 2019
Source: www.eiu.com/topic/democracy-index



In conclusion, African political situation is characterised by non-democratic governments and in chapter three the problem of non-inclusive institutions in the country will be addressed while focusing on the importance of institutions. This kind of institution can be also linked to the unsuccessful experiences with SEZs in the African continent. However, the multiple regional agreements, and the efforts by African Union aimed to create cooperation among African countries is a positive factor as political stability is at the basis of economic and social development.

1.3 Main Structural Problems

The objective of this session is to underline the main structural problems, extracted from the main issues emerged in the previous sessions.

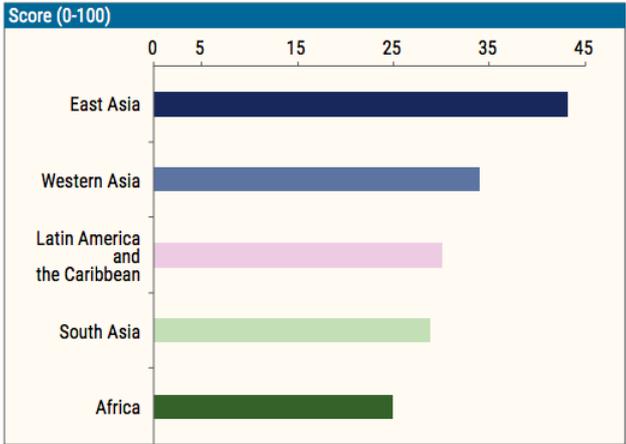
Thinking about Africa, several serious issues need to be mentioned. In particular, various are the areas in which multiple organizations are providing effective help in order to rescue people facing everyday problems concerning wars, social disorders, extreme poverty, lack of food, lack of minimal care, expanded diseases, malnutrition. Political instability also appears to be one of the most important obstacles to economic development (Addis & Zhu, 2018) as it causes institutional instability. However, although the situation with institutions and their stability is getting better over time, as underlined in the previous session.

Although these are serious problems, the following data aim to bring out the multiple structural problems of African economic systems.

1.3.1 Lack of Innovation

The “World Economic situation and Prospects 2019” developed by the UN in November 2019 shows and underlines that lack of innovation is a key structural challenge for many developing countries and that Economic diversification is impeded by structural barriers in Africa.

Figure 6 - Global Innovation Index 2019, average by region.
 Source: www.un.org/development/desa/dpad/publication/world-economic-situation-and-prospects-november-2019-briefing-no-132/



Source: UN/DESA, based on data from Global Innovation Index, 2019.

As stated above, the “World Economic situation and Prospects 2019” shows that, in the Developing regions such as Africa, has lower score in the level of innovation in comparison with other areas. This is showed in figure 6, in which the Global Innovation Indices 2019 are illustrated.

While in the previous analysis emerged that there are significant differences among subregions and especially among countries concerning the level of effort and resources dedicated to innovation, United Nations state that crucial factors include, in particular, lack of a strong scientific community and lack of skills in the labour force, sometimes including mismatches between educational outcomes and labour demand (www.un.org/development/desa/dpad/publication/world-economic-situation-and-prospects-november-2019-briefing-no-132,Nov-01-2019). As emerged in the clusters described in this paper, in cases where education would extremely help the development and innovation possibilities of the industry due to the kind of sectors involved, lack of skills is binding for innovation (see Silicon Savannah case study in Nairobi, Kenya). However, other potential development has not been undermined only by lack of specific skills and knowledge but by lack of managerial capabilities. Part of this problem emerges from the case studies in this paper.

1.3.2 Lack of Diversification

As a result of the analysis of different regions in the previous sessions, most of the subregions reveal to be dependent from external factors, such as weather conditions and commodity prices. This situation is due to lack of diversification in the economy. In fact, growth experienced in the continent in recent years is primarily due to those factors, and periods of slowdown in growth are primarily due to “bad luck”. The case of Nigeria is a great example, with economy based on crude oil sector that count for the 70 per cent of the regional GDP, while people in Southern Africa risk of not being able to afford food due to bad weather.

OECD report in 2011 already recognized the need for growing Africa to strengthening non-traditional sectors, expanding the range of products and exports and engaging with new economic partners (OECD/UN, 2011); that is, to enhance economic diversification. Lack in economic diversification is often associated with increased vulnerability to external shocks, that can undermine long-term growth. Economic diversification would help to manage such volatility but especially in least developed countries to reach this objective is a matter of solid structural transformation in all sectors. Economic diversification is linked to economic complexity that will be depicted in chapter three.

Over the last period, only a few countries were able to engage in effective incentives for diversification in Africa. For instance, two opposite examples are Zambia and Rwanda.

Zambia, in Southern Africa, is still linked to coal exports, and so to its global prices, while Rwanda, in East Africa, was able to successfully diversify exports, which before were limited to agricultural products and commodities (OECD/WTO, 2019). This is a good example explaining why collaboration of different actors within a certain sector and its related activities helps an entire region to develop with a long-term view, making its growth sustainable.

1.4 Recent Developments and Conclusions

Despite the several problems which continue to challenge African development, several recent events are bringing out a certain dynamism in the continent. These are, especially, new trends in FDI, The African Continental Free Trade Area, West African new currency and increasing interests for the continent from the international environment.

At first, the continent is showing its overall capacity to attract FDI. As stated above, The FDI-to-GDP ratio demonstrates that FDI flows are important for the continent's growth, as they boost incomes. A problem in the continent is, in fact, lack of capitals to dedicate to R&D, new investments and innovation. A report developed by E&Y in 2019, states that, in general, FDI flows from traditional investors are partially driven by strong historical relationships in the area: France, for instance, is a key investor in francophone Africa. In many cases, capital inflows in the continent from more developed countries have a donor approach. But differences are emerging from new economic partners, such as China, the United Arab Emirates and India, which are playing an increasingly important role as they account for 34 percent of total projects and over 50 percent of jobs created and capital investments as of 2019 (EY, 2019). In some case, FDI from new investors is preferred from Africa countries. For example, government of Angola accepted a USD 2 billion loan from China's ExIm Bank in preference to the International Monetary Fund (Mohan & Power, 2008). It has to be underlined that some researchers are expressing concerns about the trend of increasing FDI from China to the African continent, more commercially minded than the classic Occidental approach. Concerns are driven by the fact that China is seen as not much different from other countries exploiting African resources over time, precisely because its FDI do not encourage diversification or the formation of inclusive institutions, value-added industrialization, or redistribution of economic rents (Mohan & Power, 2009). However, the real effects of investments from new actors are not clear, as African increasing capacity to attract FDI is also a sign that the continent is a promising environment for investments.

Secondly, the establishment of African Continental Free Trade Area (i.e. AfCFTA), a customs union, represents an opportunity for achieving sustainable development through inter-continental trade. The agreement was signed in 2018 by 49 countries, members of the African Union. The AfCFTA aims to create a single market for goods and services which, once finalized, will cover 1.2 billion consumers with an aggregate income of \$2.5 trillion (www.un.org/africarenewal/magazine/august-november-2018/africa-set-massive-free-trade-area). The agreement is expected to boost intra-African trade and to support African economic diversification, industrialization and development. In fact, since a significant portion of intra-African trade occurs in manufacturing, the agreement is expected to promote industrialization and more productive jobs. The capacity of creating jobs is important for a society where young population, and work force as a consequence, is predicted to grow rapidly as seen in session 1.2.2. It is also predicted that AfCFTA, will also facilitate quicker, more efficient, and cheaper trade as well as stimulate economic activity (EY,2019). In addition, AfCFTA aims to eliminate the challenges associated with multiple and overlapping trade regimes across the countries, for example due to regional agreements. As underlined earlier in this paper, there are multiple regional agreements (i.e. RECs), with multiple purposes, and some countries are included in various agreements. In a broader sense, the AfCFTA, along with other existing agreements (i.e. regional agreements) and AU, is a demonstration that it exists a recognized ruling class, and that the role of institution is becoming more and more stronger. This is a factor of vital importance for policy makers and economic and political stability in the area.

In addition, new developments arose in December 2019, when a block of eight West African countries (i.e. Benin, Burkina Faso, Guinea-Bissau, Ivory Coast, Mali, Niger, Senegal and Togo) announced that they were changing the name of the C.F.A. franc, and renaming it the Eco (www.nytimes.com/2019/12/21/world/africa/west-africa-currency-france-franc.html, Dec-21-2019). African countries have always been somehow dependent from foreign countries, as a consequence of colonialism. C.F.A. stood for the French Colonies of Africa when the then-colonial power introduced the currency in 1945 (www.nytimes.com/2019/12/21/world/africa/west-africa-currency-france-franc.html, Dec-21-2019), and it was considered as a way through which France could exercise its power in the ex-colonies, as countries that use it are required to keep 50 percent of their foreign currency reserves in the French treasury. Even if Eco will be pegged to the euro like the C.F.A., the innovation is that reserves requirement will disappear. This is important because

it again demonstrates the increasing power of African institutions and the possibility for many African states to gain their economic independence.

Lastly, it is evident the interest from international institutions. For example, in the last years Nobel Prizes were given to several people committed in supporting African countries. Nobel Peace Prize 2018 was awarded to Denis Mukwege “for its role in helping thousands of victims of sexual violence in armed conflicts in the Democratic Republic of Congo” (www.nobelprize.org/prizes/peace/2018/mukwege/facts). The year after, Nobel Peace Prize 2019 was given to Abiy Ahmed Ali “for his efforts to achieve peace and international cooperation, and in particular for his decisive initiative to resolve the border conflict with neighbouring Eritrea” (www.nobelprize.org/prizes/peace/2019/abiy/facts). The same year, Nobel Economic Prize was awarded to A. Banerjee, E. Duflo and M. Kremer for their efforts in finding a new way to decrease global poverty, using a new method developed in African countries (www.nobelprize.org/prizes/economic-sciences/2019/press-release).

In conclusion, the world is beginning to look at the African continent in a different way making African countries, also the one that previously were not considered as active parts of the international political and economic activities, important actors in the international environment. This is due to institutional and structural changes of African states and economies.

Chapter 2

The Concept of Cluster and Main Theories

In general, clusters are defined as groups of firms involved in related economic activities and situated in geographic proximity. Clustering together gives firms multiple factors they can benefit from. For example, clustering enables enterprises to access new markets and to develop, by improving their capital attractiveness, general and industry specific skills, technology, knowledge and technological know-how. The idea has had more and more attention from researchers because over the years Industrial Cluster have been effective in several environment and at various stages of development. Cluster concepts have had an evolution over the years, this chapter illustrates the main schools of thought contributing to industrial clusters theory.

Cluster theory has its roots in the neoclassical economic tradition (Cortright, 2006). In fact, the first clear definition of industrial clusters is to be attributed to the economist Alfred Marshall, who in 1920, with his “Marshallian Trinity”, identified three main reasons why firms benefit from being part of a cluster group.

Later in the 1950s, regional scientists developed several studies focused on the location of economic activity. With regional studies space was reintroduced in the economic thinking (Cortright, 2006). Main contributions to cluster theory derived from these studies are the “urbanization economy” and the “localization economy” (Cortright, 2006). The last one, in particular, is based on the empirical evidence that a company can gain from being located in proximity to similar firms.

The urbanist Jane Jacobs found at first how cities can play a decisive role in economic growth of an area. In particular, it explained how cities are able to create important interaction among different factors, especially because of their scale and the diversity of inhabitants, cities are able to generate new ideas. Urbanization economies explained by Jacobs gave the important contribution to introduce the idea of externalities, which translates in the spill-over effect. The spill-over effect is an important element in industrial clusters’ theory.

Practitioners studies, that attempted to imitate successful clusters experiences, also contributed with cluster theory. In fact, the exceptional economic performance of small European firms prompted international interest among economic development practitioners

in the late 1980s. In the beginning, particular attention was given Northern Italy, involving trade associations, industry service centres, and local research organizations (Cortright, 2006).

In 1991, Paul Krugman introduced the “New Economic Geography” (Krugman, 1998), in which he explained why firms are attracted to one another. Although its work have not been demonstrated and tested by many empirical studies (Cortright, 2006), the new economic geography theory share with the cluster framework the focus on the role of location, as well as the work on urban areas (Ketels, 2017).

From a social and institutional perspective, other scholars moved the focus from a market in which firms take their individual decisions, to the effects of social forces and relationships in the network, emphasizing forces such as customs, technological change, organizations, and social networks. (Cortright, 2006). In this group of studies, important was the work of Piore and Sabel’s case studies of Italian industrial district in Emilia Romagna, which showed that networks of small, craft-oriented industrial firms were thriving in the international marketplace by producing high-quality products (Piore & Sabels, 1984).

The most important contribution to cluster theory was provided by Michael E. Porter in 1990, which gave a first definition of a cluster, drawing a theory from both neoclassical and institutional works. He described the factors of competitive advantages in its “diamond of national advantage”. Porter’s work also emphasizes again the importance of space and location of a firm, which affects its economic performance and the role of the government (Porter, 1990).

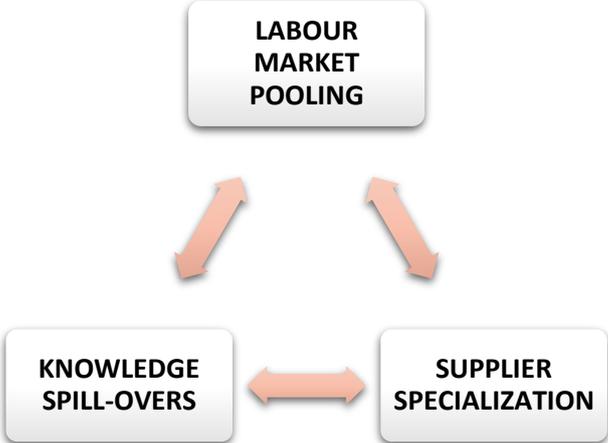
Finally, in recent years a contribution to punt into practice cluster theory using real data, cluster mapping methodology has been studied. In fact, especially from a policy point of view, scholars and practitioners noticed that it was not easy to implement the theory because of lack on cluster data. The difficulty in obtaining these data is also caused by the lack of a real methodology in recognizing the factors of the cluster and the characteristics of the related industries (Delgado et al., 2014).

The main contributions to the cluster theory are more deeply analysed below; they are the Marshallian trinity, Krugman’s New Economic Geography, the Porter’s Diamond of National Advantage and Cluster Mapping.

2.1 The Marshallian Trinity

Widely agreement among scholars and practitioners is to attribute to the economist Alfred Marshall (1920) the first clear description of industry clusters (Zeng, 2011; Chou et al. 2011).

Figure 7 - The Marshallian Trinity
Created by the author based on Marshall, 1920



His description was elaborated by observing the pattern of industrial districts of England at that period, while he was trying to provide insights to the organization of the industrial districts. In his study, he first noticed that groups of firms located close to one another were taking advantage from their proximity and were more efficient than they would be separately. He was able to identify three reasons to explain this kind of advantage, illustrated in figure 7, called “The Marshallian Trinity”; these are labour market pooling, supplier specialization, and knowledge spill-overs. In fact, Marshall observed that a pool of labour with common set of skills attracts firms with similar characteristics, as they could develop and benefit from labour skills. At the same time, individual workers could minimize their economic risk by being located in places where many firms look for specialized workers with their skills. Marshall also noted that the same concentration of similar firms represented a good market for their suppliers, which in turn needed suppliers more and more specialized in their sector. Thus, suppliers specialized to meet firms’ demand, and this resulted in better products for their customers, which could enhance their efficiency and quality of goods. Finally, Marshall found that knowledge was “in the air” (Marshall, 1920) because ideas and new findings and inventions were more easily exchanged within the industrial district. Marshall's description of industrial districts identified what economists today call "external economies," productive benefits that are not captured by the individual firms that create them (Cortright, 2006).

2.2 Krugman's New Economic Geography

Paul Krugman, in 1991, gave birth to the “New Economic Geography”. The focus of attention was on firms’ localization and on the circular process that attracts agents, more related with economic factors but also social factors and others. This circular process is primarily created by the location of suppliers, and market of reference, which attracts the location of specialised producers, and vice versa. This mechanism was already existing in geography studies and adapted and developed by Krugman to economic theories (Krugman, 1998). In the “Dynamics of geographical change”, what Krugman wants to understand is if an initial spatial concentration in one location, of a certain activity is self-reinforcing, because as previous economic theories stated, usually dynamisms will tend back toward a symmetric estate, creating a non-disparity between different locations in the long-term. An important role in its work is given to innovation as a tool for companies, and then nations, to gain competitive advantage. The focus of its work is giving importance to centripetal or centrifugal forces that give birth to a certain kind of agglomerations (Krugman, 1998).

Generally, new economic geography work shows that geographic clusters of firms are most likely to form when increasing returns to scale are strong; firms have power to set prices; transportation costs are low; and customers, suppliers, and workers are geographically mobile (Ottaviano, 2003). However, the theories are considered quite abstract because only few researchers tried to empirically test them over time (Cortright, 2006).

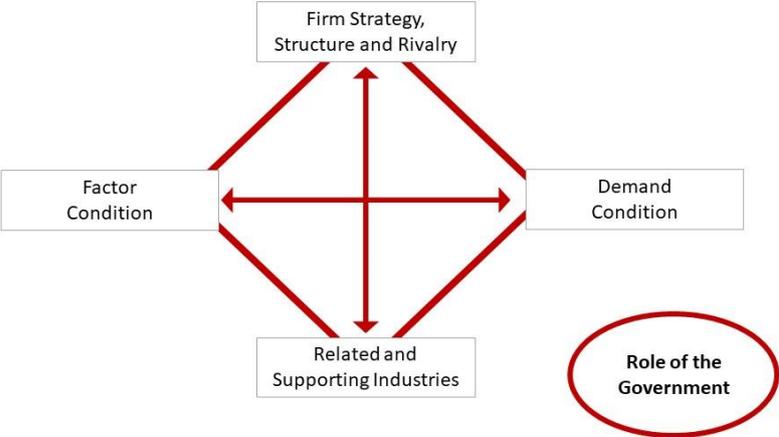
2.3 Porter's Diamond of National Advantage

The first important contribution and more specific definition of Industrial Clusters was introduced and explained by Michael E. Porter in 1990. In his study called “The competitive advantage of Nations” he recognised the power of the cluster system, which intensely contributes to the competitive advantage of a nation. The definition was clarified by subsequent studies, but according to the definition given by Porter, a cluster is a group of geographically interconnected companies and associated institutions that specialize in a single sphere, and united by common interests and complementary (Porter, 2000).

Porter developed a more concrete theory of industry clusters beginning with a global study of the world's most successful businesses. Porter's analysis was initially focused on the private sector's conditions from which each successful cluster was born (Porter, 1998).

From his study he first found evidence that in various case studies firms from different nations have success in different and particular industries. As a result of its work, in “*The Competitive Advantage of Nations*”, Porter describes industry clusters as the product of four factors, embedded in a system that he called the “diamond of national advantage” (Porter, 1990). These are: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry.

Figure 8 - Porter’s diamond of national advantage model
 Created by the author based on Porter, 1990



As stated above, Porter's work emphasizes the importance of place and location from a firm’s perspective. The intuition is that a company's location affects its strategy and performance. In addition, the Porter’s diamond of national advantage designs a system in order to explain the factors and related links from which one can understand why firms belonging to a cluster are more competitive than isolated firms.

In the diamond of national advantage, starting from the factors already mentioned, other related and complementary actors contribute to the development of the industry, along with the development of the specific cluster, benefits of cooperation are spread all over the industry, related industries, the entire sector and the nation. The diamond is designed as a system, based on the links among the different elements, that are able to create dynamism from an economic and social point of view, throughout which benefits are shared.

Porter's Diamond is a graphic representation of how a group of close-by, supporting industries creates competitive advantage. Characteristics of the diamond factors are explained below.

Factor condition: The factors mentioned by Porter include all the elements of production from which all firms in the cluster can benefit. For example, here we find element such as skilled labour force, specialized infrastructure, and educational institutions. Ten years later, Porter stated that in order to increase productivity in the cluster, these factors must improve over time in efficiency, quality, and also in specialization (Porter, 2000). The specialization of factors developed within a specific cluster are available only in that specific location, no other location provides the same set of services and products (Porter, 1990).

Demand condition: Demand is an important element to give producer firms the impulse to improve. Demanding local customers will force firms within the cluster to continuously innovate. In addition, to meet costumers' needs and to understand what they are demanding, cluster firms must cooperate with them. In addition, the more sophisticated the local demand, the more firms in the cluster will be specialized and will improve the quality of goods and services offered. This will then make them more competitive in comparison with other firms in the same sector when entering in the global market.

Related and supporting industries: Producers firms are not creating value on their own. Locally based suppliers as well as competitive related industries are able to create a supportive web for firms. As previously noticed, also in this case cooperation is needed between firms and their suppliers in order to create competitive advantage. Moreover, this cooperation leads to innovation driven by the exchange of information and knowledge about new processes and products.

Firm strategy, structure, and rivalry: Firms strategy are also relevant for the success of the entire cluster. In fact, if firms' strategy consists in continuous investment in order to develop, the cluster will end up remaining more competitive. Rivalry is also important, as it will push firms within the same sector and cluster to choose a strategy through which they can improve in order to keep up with the rivals or to overcome them.

In addition, Porter's work emphasize that these factors are included in a system and then linked together; that is, they have an impact into the levels and productivity and efficiency of other agents and of the entire system. Porter added also that the cluster is the diamond at

work with all its derived dynamics which lead firms to continuously innovate. In addition, proximity among factors, such as suppliers, firms, costumers, skilled people and institutions, amplifies all the pressures to innovate (Porter, 2000; Cortright, 2006).

As can be seen in figure 8, Porter's description of the cluster system involves the role of the government. In the competitiveness framework, other authors put emphasis on the importance of the government action in this sense (Baily & Montalbano, 2018). In the diamond, the role of the government is to be a catalyst and a challenger (Porter, 1990).

In Porter's study government is considered an active agent in the cluster formation and development, as cluster does not become efficient and productive on their own, but on the contrary by taking the right decisions to encourage certain factors and links, thus, being selective. The government role is essentially of transmitting and amplifying forces of the diamond, and its role is powerful in directing cluster activities, even if the role of the government is an indirect role (Porter, 1990). The interaction among factors is mutually advantageous and self-reinforcing, but it does not happen automatically (Porter, 1990), that's why the system has to be examined and potential factors and policies must help the industry strengthening the missing or weak complementary factors of the diamond. For example, as I will discuss later in the analysis of South African wine industry, deregulation is a strong tool. It encourages local competitiveness, and this raise incentives for innovation among the competitors in the industry, i.e. in the cluster itself. One of the main problems for policy makers is that a cluster can take a decade or more in order to produce competitive advantage, while for the government and politics a decade is often too much, because things usually go faster. Even if it has an important role in creating the favourable environment for cluster development as it conveys cluster members and works with private-sector cluster organizations, its action can not constitute the centre of cluster policy (Cortright, 2006).

The conclusion of Porter's analysis, is that the process of clustering and cluster emergence is shaped starting from initial positive conditions, but the decisions firms make about their investments and ways of competing as well as the decisions governments and other institutions make about relevant qualities of the cluster-specific business environment are essential in the development of the cluster.

2.4 Fundamentals of Cluster Mapping

More recently, more sophisticated studies are trying to develop an algorithm in order to identify the boundaries of clusters and to map them, starting from a classic definition of a cluster as “a geographic concentration of industries related by knowledge, skills, inputs, demand, and/or other linkages” (Delgado et al., 2014). Researchers aim to find an algorithm in order to well define clusters and the related industries surrounding them, recognising that the importance for policy makers to base their efforts and capacities utilising cluster-based data (Ketels, 2017). Cluster based data permit to focus policies to specific local problems and to make these policies more and more customize. At the moment, in fact, even with good intentions, it is difficult for policy makers to take right decisions without a clear database of this kind of agglomerations (Delgado et al., 2014). Cluster mapping is a complex study that would also permit to analyse the real development of industrial clusters over time, in a more precise quantitative way.

2.5 What is a Cluster? Different Structures and Characteristics

Many researches tried to find a precise definition of a cluster, using different methodologies, and trying to demonstrate and understood their importance for regional development, even if some scholars also claimed that researchers should accept the fact that a cluster is a broad concept, and that it is not possible to precisely define it, also because clusters features can vary a lot across industries and places (Cortright, 2006). In fact, it can be said that , a part from new studies in Cluster Mapping, the definition of cluster is primarily a conceptual idea (Ketels, 2017) with some key features, that reminds the characteristics of the systems described by Marshall and Porter as previously described. Structure of the cluster can be different and, as already explained, its characteristics can sensibly vary from cluster to cluster. The mostly recognized way to describe the possible cluster structure is the one developed by Markusen in 1994. Markusen classified clusters into four categories (Markusen, 1994): Marshallian cluster, hub and spoke, satellite platform, and state-anchored cluster, each of them has a different economic logic. The different clusters are divided in groups based on similar characteristics, and this kind of classification is used by many other works (Ferreira et al., 2012) as they are recognised to be simple and effective. Every group has different advantages and are suitable in different contexts. I will briefly discuss the different characteristics of the groups below.

- **Marshallian clusters**, also called networked cluster or industrial districts, are primarily composed by SMEs (i.e. Small and Medium Enterprises), which are locally owned and can be specified in craftsmanship, high technology or services industries. Advantages for firms within this kind of clusters are especially that they have access to local knowledge, also derived from specialized skills in labour markets, low transportation and transaction costs, cultures of flexibility, trust, cooperation, and available local infrastructure supporting specialized sales, service, and supplier networks.

- **hub and spoke** cluster are the one in which one or more larger firms dominate the system and smaller suppliers and related activities surround them. In this cluster logic, Smaller firms in the region can be both linked to the dominant firms through supply chains and strong relationships, or simply be located nearby so to gain advantage from economies of agglomeration.

- **satellite platforms** are the one dominated by externally oriented firms, thus in which there are few intra-cluster exchanges and the firms dominating the cluster are more oriented to the parent headquarters and other sister subsidiaries elsewhere.

- **state-anchored clusters**, also called institutional clusters, emerge when the cluster is dominated by a public company or a non-profit company (e.g. university). In general, this kind of cluster is externally focused and only in a second level are involved in activities providing benefits to the local economy.

Different regions have different sets of economic development opportunities and different strategies need to be developed for different clusters; the structure of the cluster itself tells a lot about the possibility for it to gain more and more competitive advantage and to be relevant for the regional development, as emerged by Markus theory. This session aimed to depict how different structures lead to different benefits, due to the different strength, nature and quantity of linkages in the network constituting the agglomeration. Marshallian clusters, with more links and freer links are the one that potentially lead actors to get more benefits from the agglomeration.

Chapter 3

Clusters: Key Determinants for Development

Cluster is a key organizational unit for understanding and improving the performance of regional economies, as a regional economy is formed by related firms who take advantage from their proximity rather than unrelated firms. This is underlined by Marshall and Porters in their studies. Over the last decades, a growing number of empirical literatures have shown the positive impact of clusters on regional and industry performance, including job creation, patenting, and new business formation (Delgado et al., 2014). Clusters have been found to increase the innovation levels, efficiency, and productivity in which participating companies can compete, nationally and globally (Porter, 1998). Industrial clusters, especially in the form of industrial districts and innovation districts, are shown to be key sources of productivity growth in an economy (Yusuf et al., 2008; Baily & Montalbano, 2018). In the previous chapter it has been shown how several theories illustrated and explained this phenomenon of concentrated firms and activities within a country. This chapter focuses on the mechanisms through which benefits are created.

3.1 The Cluster as a Development Tool

One of the most famous examples of how a cluster can develop and be a source of competitiveness is the example of the “Italian Ceramic Tile Cluster”, grown up after Second World War in Emilia Romagna, Italy (Piore & Sabel, 1984; Porter, 1990). The study was first developed to highlight the advantages of small manufacturers who collaborate in the Italian industry and was used by Porter to explain his diamond model at work. Italian cluster have been studied multiple times, in many sectors, as Italy has had many successful examples in its territory in which spontaneous agglomeration of firms gave birth to industrial clusters that became famous all over the world. The positive experiences of iconic clusters, for example the Silicon Valley in California as an innovation hub, the Emilia Romagna region in Italy for the Italian automotive industry and many other cases also in Asia and South America continuously raise the interest of practitioners and scholars for the subject, as they have been important in the development and growth of the area in which they were settled (Yusuf et al., 2008).

Multiple are the evidences showing the benefits of clustering, and researches focused on the mechanism through which this happens, such as agglomeration economies and localization economies. Regional and urban policies in both industrial and industrializing economies focused on cluster systems for several reasons, such as the co-location of numerous firms, which can generate employment and concentrate many other related services; substantial localization economies, which promotes specialization and incremental innovation; the several links create a networking effect, which generates spill-overs (Yusuf et al., 2008); in addition, by increasing innovation, industrial clusters can be a source of economic diversification and economic complexity.

Furthermore, researchers found evidence of the specific positive effect of clustering on R&D expenditure by companies and that spill-over effect from R&D is influenced by geography (Bakhtiari & Breuning, 2017). Generally, the research based on cluster-based economic development focus on the advantages that accrue for firms when they cluster together similar of what academics call agglomeration (Donahue et al., 2018). Agglomeration economies have in fact a central role. Several studies over time defined economy of agglomeration (Rosenfeld, 1997; Duranton & Puga, 2004) and its benefits in terms of source of growth, especially by studying city clusters. Researchers also showed how agglomeration of enterprises leads to more capital accumulation inside the cluster (Yoshino, 2010). In general, economists argue that firms benefit of agglomeration through three foundations: sharing, matching, and learning (Duranton & Puga, 2004). Sharing invisible goods and facilities (e.g. tailored facilities, infrastructure, and suppliers), marching workers productively through deep labour markets, learning through knowledge-rich environments that facilitate knowledge exchange and innovation between interdependent firms. Agglomeration economies explain why clusters are formed, are based on the forms belief that firms and researchers benefit from locating near each other (Duranton & Puga, 2004; Baily & Montalbano, 2018). Geographic proximity of actors does not automatically lead to agglomeration economies and therefore to spontaneous flows of learning and innovation (Zeng, 2011). The mechanism of agglomeration economies consists in sharing goods, especially invisible goods such as infrastructures; in matching resources, with particular importance of matching skills of workers with the job offered; and in learning from continuous exchanges of information and innovations. The conclusion of this mechanism is that agglomeration improves innovative capacity of companies in the cluster. Therefore, as agglomeration economies are present in the clusters' systems, where people, factors and

firms cooperate among each other, they boost the innovation capacity of firms, they enhance growth and leads to more economic sustainable development trajectories.

As a consequence, industrial and innovation district implement economic diversification and economic complexity. Economic complexity is an important factor to consider in the national development path. The core thinking of complexity theory is that more complexity means more prosperity (Hidalgo & Hausmann, 2009). Industrial clusters allow economies to produce more sophisticated goods and services. In order to be effective industrial clusters must have articulated linkages, creating a network among them. This network is a representation of complexity: the more various the nodes and linkages of the network, in the product space, the more the complexity level of the system, which leads to more growth (i.e. complexity self-generates). In short, the evolution of industrial clusters is led by two forces: the specialization and the diversification that widens the useful knowledge, enabling new products creation (i.e. enhancing innovation). Good institutions and effective industrial policies should boost both forces: strengthening diverse skills at local level and fostering their connections and contamination with external knowledge. Moreover, the final objective of industrial clusters policy is to create a broader network connecting different industrial cluster, specialised in specific industries and sectors, while creating clusters in different sectors, implementing economic diversification. The role of economic complexity and of institutions are explained in more details in the next sessions.

3.2 Economic Complexity Approach

Economic growth has been linked with economic complexity, saying that economic complexity is a driver for long run growth of firms and territories (Hidalgo & Hausmann, 2009). Economy of agglomeration explains why is important for companies to work close to each other, and that a country where a certain industry is developed is more likely to develop new products in close industries, because of their proximity. Related industries, or related products, can benefit from existing knowledge, thus this knowledge is spread in similar topics. From specialization of the cluster in a specific sector the same structure can give birth to diversification. Diversification happens in the proximity of the existent space of products (Hidalgo & Hausmann, 2009). Starting from the assumption that development is associated with an increase in the number of individual activities and with the complexity that emerges from the interactions between them, Hidalgo & Hausmann (2009) developed a view of economic growth and development that gives a central role to the complexity of a

country's economy (Hidalgo & Hausmann, 2009). They used trade data to link the fact that countries are connected to the products they export and the complexity of a country's network. By analysing this kind of data, they finally conclude that development efforts should focus on generating the conditions that would allow complexity to emerge, in order to generate sustained growth and prosperity. This important conclusion implies that policy efforts must aim to create a favourable environment for economic complexity, from this viewpoint policies must concentrate in creating favourable environments for industrial clusters' development. In fact, the evolution of Industrial Clusters is led by both specialization in a certain area that deepens the skills and the diversification that permits to spread this skills and knowledge, leading to an increasing in innovation potential. Economic complexity is linked to the idea of economic diversification, as a country with a diversified industrial base has this product or industry proximity with more products, this reflects in many possibilities of innovation and therefore more possibilities to reach economic growth based on different sectors growth in every kind of sector. A more diversified industrial base reflects in a more diversified export base. Thus, if a country has more varied export portfolio it means that it has more economic complexity and it has more probability to develop (Hidalgo & Hausmann, 2009) and innovate. Cluster economy can be a precious help in increasing innovation because industrial clusters are able to increase skills in the manufacturing sector and industrial sector throughout specialization; at the same time the dynamism of the network that surrounds the cluster leads to more complexity. On the contrary, a country with a specialised export portfolio has less probabilities of spreading knowledge in several sectors if actors are far from each other within a poor network and this limits its possibilities to grow. Hidalgo & Hausmann (2011) call "products space" the set of relationships among industries given by the mutual proximity.

Main assumptions of economic complexity are based on the relationships among knowledge creation and diversity of products produced; from this point of view, it is important for a country development the amount of embedded knowledge it has. In fact, products that require specific knowledge and more quantity of knowledge are likely to be made in specific spaces where this knowledge is embedded. Furthermore, this knowledge must be achievable and spread. In addition, the idea of ubiquity is relevant. Ubiquity is the number of countries that make a certain product; Hidalgo and Hausmann (2009) show that the more complex a product is, the less ubiquitous it is. In conclusion, diversification of competences allows less

ubiquitous productions, which in turn widen the stock of initial competences: complexity self-generates.

3.3 Why Institutions Matter

Institutions have an important role in the development of a country. The positive role of institutions has been first recognised by the book of Douglass C. North (1971), “Institutional Change and Economic Growth” In the book, North wanted to underline the linkages of Economic growth of a country, and its development possibilities, with the important role of institutions that inevitably effect economic actors and their decisions. In its work, North states that the growth of more efficient economic organizations was very important in the growth of the “Western World”, comparing its relevance with the one of technology development (North, 1971). Moreover, North recognise that Institutional arrangements do not always positively affect the economy, leading to increased output and productivity. On the contrary, institutional arrangements that aim to enhance income redistribution make income fall, this last type of institutions derives from coercion and the only legal source of coercion is the government, which can act both tacitly and overtly (North, 1971).

Furthermore, North distinguish between fundamental and secondary institutional arrangements, stating that both types must be taken into consideration. In fact, secondary institutional arrangements the ones that aim to improve innovation, leading to profit maximization, that are included in the “fundamental rules of the game”. These last ones ate the fundamental institution arrangements, those rules that govern non-market decisions (North, 1971). Thus, fundamental institutional arrangements are basic ground rules defining the structure of property rights affecting competitive and cooperative relationships in the market place. These may exist as written constitution, as a body of written laws or as customs (North, 1971), often combined together. In its studies North (1971) give to path dependency a great importance when related to institutional change and in economic growth. In conclusion of this considerations, the author concluded that government has an important role in economic development, and it must be considered in economic development studies.

The study of the importance of institutions moved on over the years, starting from Douglass North considerations. In particular, the book that, more than the others, was important for its contribution on the explanation of the role of institutions is “Why Nations Fail: the Origins of Power, Prosperity and Poverty” by Daron Acemoglu and James A. Robinson (2012). In

this book, the authors underline that more developed nations are wealthier because of the presence of inclusive economic institutions (Acemoglu & Robinson, 2012). The mechanism through which these institutions effect the development of nations is linked with their relationships with the free market. In particular, the state gives incentives for investments and growth by guaranteeing infrastructures, private property rights, education and control on violence. In addition, in developed nations the government is controlled by citizens, representing all the population in a democratic environment and institutions and laws created by the government and citizens together must work for the majority of people.

On the opposite, underdeveloped nations, among the others African countries, are characterised by extractive economic institutions. This other kind of institutions are called extractive because they are designed to extract incomes and wealth from society, moving benefits to a different part of the society. These institutions generate prosperity in the short-term but in the long term they bring the nation to poverty. The example of these extractive institutions that more clarify the point of view of the authors was primarily focused on ex colonies. In this sense, also in their view institutions have path dependency with their history. In fact, Africa is characterised by a colonialism history in which the colonial power established extractive institutions, which created a system that went on in post-colonialism development generating civil wars aimed to get control over extracting institutions.

The authors showed the existence of the opposite kinds of institutions by studying empirical evidence from comparative studies of countries which are in geographical proximity to each other, concluding that the cause of their different economic performances and level of development lays in the different institutions that have been established in the country over the years. The main reasons nation fail today is because they are at the mercy of extractive institutions that do not create any incentive to innovate (Acemoglu & Robinson, 2012). In many cases, for example, politicians suppress some economic activity because these threaten their power base. This happened, for example, in many African countries such as Zimbabwe, Sierra Leone, Angola, Cameroon, Chad, Liberia, Democratic Republic of Congo and Sudan causing civil wars, mass displacements, famines, and epidemics, making many of these countries poorer in the 2000s than they were in the 1960s.

Also in this book, path dependency is underlined, giving to historical factors the main fault for underdevelopment, instability and poverty. In fact, the authors talk about a vicious circle, started when colonial power established extracting institutions. Post-colonial rulers often

took the lead of the extracting institutions, establishing their control by civil wars. In particular, Acemoglu and Robinson (2012) recognised this vicious circle all over sub-Saharan Africa, such as in Ghana, Kenya and Nigeria and many others. In all these cases, extractive institutions followed the vicious circle.

Furthermore, in nations with extractive regimes it is difficult to attract FDI, but also aid money, due to the corrupted environment. For example, the authors state that only 20 per cent of aid money reaches its ultimate destination in nations characterised by extractive economic institutions (Acemoglu & Robinson, 2012). As seen in session 1.2.3 the continent is mainly characterised by authoritarian regimes and hybrid regimes, with only few exceptions.

From the book of Acemoglu and Robinson (2012) it emerges that the level of democracy is important, being more democratic countries more likely to develop and grow as they are characterised by inclusive economic institutions. That is why level of democracy and institutions must be taken into consideration. Role of the government is important in order to understand the possibility for a cluster to become more and more relevant for the economy of one country, and this was also underlined by Porter (1990) in the first industrial clusters studies. In fact, what institutions can do is to incentive investments and innovation in the country, but it also incentive the creation of the network permitting to the cluster to enhance linkages, spill-overs and knowledge transfer.

3.4 Positive Factors for Industrial Clusters Success

In this section favourable and unfavourable conditions for cluster success will be analysed. These considerations are made up from both clusters theory and empirical evidences accomplished over the past years.

Clusters' theory introduced by Porter (1990) showed how source of innovation and development comes from the industry, in which factors and actors collaborate together. **Collaboration** is, in fact, the main driving force of development in cluster's theory. In addition, in the Marshallian trinity explained in chapter two, the importance of collaboration is found. In fact, the three factors (i.e. labour market pooling, knowledge spill-overs and supplier specialization) can become a driving force only with a close network connection among them. With more and more links among actors the clusters and the actors within it have more incentive to improve their services and offers.

Coordination is crucial for cluster development, especially while talking about coordination among policy makers, who are able to give incentives to clusters' development, and clusters' needs. Coordination is needed inside and outside the cluster and this is in part a function of inclusive economic institutions such as associations. This is coordination problem augment when there is decentralization in the political power, thus provincial governments have more autonomy. In absence of coordination among provincial governments, dynamism created by the development of the regional cluster is limited and spread of resources restricts the possibility of other places and regions to benefit from the cluster success. For example, this problem has been evidenced in Asian clusters. In China, for instance, the central authorities retain control of macro level policies and over the development of the major infrastructure, but regional and urban projects are increasingly delegated to regional authorities. Therefore, in the absence of a common strong system for coordination, which is able to guarantee interprovincial transfers, less industrialized regions can not benefit from strong development clusters (Ming and Zhao, 2007; Yusuf et al., 2008). This situation is named insular cluster, as the benefit within it are not spread outside. These critics are moved and evidenced especially when cluster are created "top-down" with special policies in SEZ (Kaplinsky, 1993).

Another important factor for the success of a cluster is its **complexity**. In fact, the more complex and the larger the network, the more will be the amount of knowledge spill-overs and relationships able to create incentives. The complexity of the product is also important. The possibility of diversification of the product and in the related industry, for example the possibility to create multiple variables, the possibility to renovate the offer and the possibility to be linked to multiple sub-component markets make the cluster to enhance its potential growth. This is the case of computer industry and high-tech sector, such has the thig that happened in Silicon Valley in California (Yusuf et al., 2008)

Krugman's New economic geography theory underlined the role of **geography** in economics, as explained in the second chapter. In his work, he stated how understanding the role played by place and geography is a key determinant for regional policies (Krugman, 1998). The main reason is that attraction among firms is self-reinforcing and it is more likely to happen in places where there are high return-to-scale. This is also found by other studies. For example, Yusuf et al. (2008) found that success of tech industry's clusters in Asia was in part conditioned by urban venue. The more the services around the area, and the more

connections with external places, the more the cluster is likely to succeed. On the contrary, clusters situated in isolated places or poor location without infrastructures, housing and other essential services have less positive prospects. Geographical factor can also be relevant for the available natural resources in the area. For example, wine industry is affected by favourable weather, thus geography and location is important.

Location is also important because “good” locations, attract people with skills. In fact, the availability of infrastructures in an area, services and so forth help the specific location (i.e. the cluster) to be more attractive for **people with skills** (Baily & Montalbano, 2018). A recent United Nations Industrial Development Organization report provides a perspective on the effects of clusters on poverty in less developed countries (Nadvi & Barrientos, 2004). Findings showed how “loser” clusters are particularly likely among those with the least skills and weakest labour market attachment. An agglomeration needs people with skills and with the right skills. Matching labour market demand and offer, is an important fundamental in agglomeration economies, as previously explained, as it enhances people potential and firms’ efficiency. Availability of high-skilled people is always important in a cluster, especially concerning managerial competences. Furthermore, already existing studies focused on industrial clusters in Africa point out the lack of managerial skills and knowledge among entrepreneurs running micro and small enterprises, and this results to be one of the major constraints on innovation and growth in the clusters (Yoshino, 2010). In addition, when the industry is related to technological industry skills become more and more important. For instance, Silicon Savannah in Nairobi, Kenya, that will be discussed in the next chapters, misses people with skills in order to become the high-tech hub of the African continent that is in Kenya’s project. In addition, the importance of skills and varieties of skills in the same space (i.e. in a country) is shown by Hausmann and Hidalgo (2010), arguing that each product requires a potentially large number of non-tradable inputs (i.e. capabilities), and that a country can only make the products for which it has all the requisite capabilities, therefore certain industries are more likely to develop where people have more capabilities (Hausman & Hidalgo, 2010).

Regulatory environment is crucial in some cases, as in some jurisdictions, regulatory barriers can be problematic (Baily & Montalbano, 2018). For example, liberalization of the market is a helpful incentive to make firms joining the industry. In addition, the adoption of SEZs has been essential to unlock industrial clusters in China (Zeng, 2011), and international

agreement between the European Union and South Africa enhance the volume of trade in the African country, being essential for the international recognition of South African wine industry at a global level (Zeng, 2008), as will be debated in the next chapter.

The **government** and inclusive economic institutions' role is to collaborate and work along with other institutions, in particular with the university, and with business leaders. These two segments are able to identify the core competency of a potential cluster (Baily & Montalbano, 2018). As discussed earlier in this paper, in the Porter's diamond the role of the government is to be a catalyst and a challenger (Porter, 1990), and in order to implement the right policies the government has to be aware on the specific characteristics. Other functions of the government are to create an attractive area and facilitate environment by improving infrastructures (Baily & Montalbano, 2018; Zeng, 2008). In addition, some studies state that the development policies put in practice by the government must aim on solving cluster problems rather than focusing on single firm's problems (Cortright, 2006)

Access to funding, especially venture capital when thinking about innovative sectors (Baily & Montalbano, 2018). For instance, this factor emerges from the Nairobi case study in this paper and in ICT clusters in the world, for example in Silicon Valley in California (Engel, 2015) and in ICT clusters in Asia (Yusuf et al., 2008). Other sources of funding can be the federal or state government even if they can not be the only source of capital (Baily & Montalbano, 2018) as in the long term it can result in resource wastes.

Last factor to consider is **culture** especially because a sharing culture facilitate knowledge transfer, spill-over effect and ideas sharing. Culture is in many cases underestimated by practitioners, even though its importance is stressed by researchers and empirical evidences. (Baily & Montalbano, 2018). The clearest impact of culture was studied by Dupont & Saxenian (1994). In their book "Regional Advantage: Culture and Competition in Silicon Valley and Route 128" they examine why Silicon Valley won the race against Boston's Technology Corridor (Dupont & Saxenian, 1994). The two technological districts were in competition and both could potentially become the hub of high-tech innovation in the USA. In this context, researchers argue that cultural differences have been crucial for the Californian district in winning the game: more networked-based economic system, more cooperation and flexibility in communication are seen as positive factors in the cluster development. That is, the culture is important for the development of successful industrial

clusters and more liberal and flexible environment can often improve cooperation and free coordination among actors.

In conclusion, the main factors to consider to help a cluster to develop are collaboration, coordination inside and outside the cluster, product and network complexity, geography, skills, regulatory environment, roles of the government and of the institutions, access to funding and, finally, culture. All these factors help the cluster birth and development, some of them can be controlled. For example, more active institutions can be created by both public and private efforts. The regulatory environment is necessarily influenced by government decisions. Lack of collaboration, coordination, skills and difficulties in access to funding can be improved by the government and the institutions.

Chapter 4

Clusters in Africa: Case Studies

Although Africa still faces many challenges, it is slowly demonstrating an improvement in the economic vitality, in broader terms looking to overall data as showed in chapter one, as well as in the form of clusters of enterprising that are contributing to national, regional, and local productivity as will be showed in this chapter. Literature based on empirical analysis showed that positive industrial clusters performances are present also in less advanced economies (Yusuf et al., 2008; Zeng, 2008), with successful experiences even in sectors where high level of knowledge is needed (Oyelaran-Oyeyinka, 2006; Yusuf et al. 2008). In fact, since innovation capabilities are a main element in cluster success, crucial questions when studying industrial cluster structures in underdeveloped and low-income countries are whether knowledge and technology can be put to work to generate economic growth and whether these clusters are sustainable and replicable (Nadvi, 1999). Still, efforts are needed in order to outline the importance of conducting research, specially concerning cluster mapping, in developing and emerging economies (Ketels, 2017). Studying this kind of development process does not give immediate results. Multiple research papers claim that conclusions are not uniformly applicable across different sectors and regions (Zeng, 2008), because every cluster is unique. However, as stated by Porter, the uniqueness and inimitability of the links and actors of the local environment within which the cluster is situated, give to the specific system its competitive advantage (Porter, 1990) as they have non-tradeable inputs. However, this chapter aim to explain some clusters as an example of their experiences in the country. Previously studies showed that African industrial clusters, with agglomerations of different sizes, have been able to leverage local comparative advantage, to foster production in the entire value chain and to contribute to gains in efficiency in the continent (Zeng, 2008). Empirical evidences, however, bring out differences in cluster potential performances, based on national level capabilities, with clusters in the highly industrialized countries characterized by high economic performance while clusters in developing areas exhibit more problems and less possibilities of success (Oyelaran-Oyeyinka, 2006). Furthermore, all factors listed in the previous session must be considered.

In the following sections four African case studies are depicted: Silicon Savannah (i.e. the new innovation hub in Nairobi, Kenya, East Africa subregion), Suame Magazine (i.e. a vehicle repair and production cluster in the city of Kumasi, Ghana, West Africa subregion), Otigba Computer hardware Village (i.e. the Computer hardware cluster in Lagos, Nigeria, West Africa subregion) and wine cluster in South Africa (i.e. the wine industry in the country, Southern Africa subregion). The four clusters are within some of the strongest economies in the continent and the one able to attract venture capital (www.vc4a.com), still, these countries have some structural challenges as explained in chapter one. After a brief overview of the structure and history of the cluster, they are illustrated using industrial cluster theory, deployed in chapter two. Main results are then compared with empirical evidences emerged from other case studies around the world.

At first, the theory used is primarily centred in Porter's diamond of competitive advantage. The Porter's diamond is used in order to understand the strengths and weaknesses of the various clusters, to give suggestions on the kind of activities and incentives that are needed to augment their competitive advantage. The Porter's diamonds of the clusters are made on the basis of the suggestions and instructions provided by the World Bank organization (2009). These instructions are useful because they give a clear overview of the most relevant characteristics that are important to examine when fitting the Porter's model with empirical data. Instructions essentially give relevant questions to answer when using the Porter's diamond. These questions are listed in appendix 3. Conclusions are drawn including suggestions from other theories depicted in this paper and including the role of the government, as institutions are important for the economic development of a nation, as explained in the previous chapter.

Furthermore, empirical evidences from other case studies in different countries, involving both developed and developing economies, complete the analysis. In fact, necessary conditions for a cluster to develop and succeed are not easy to identify, even with the comparison with the theory. Mechanisms within the network of different levels of relationship make the analysis even more complicated and many researchers complain that cluster analysis results and studies are not universally useful (Cortright, 2006). For this reason, the empirical framework of other realities becomes important.

4.1 Silicon Savannah in Kenya

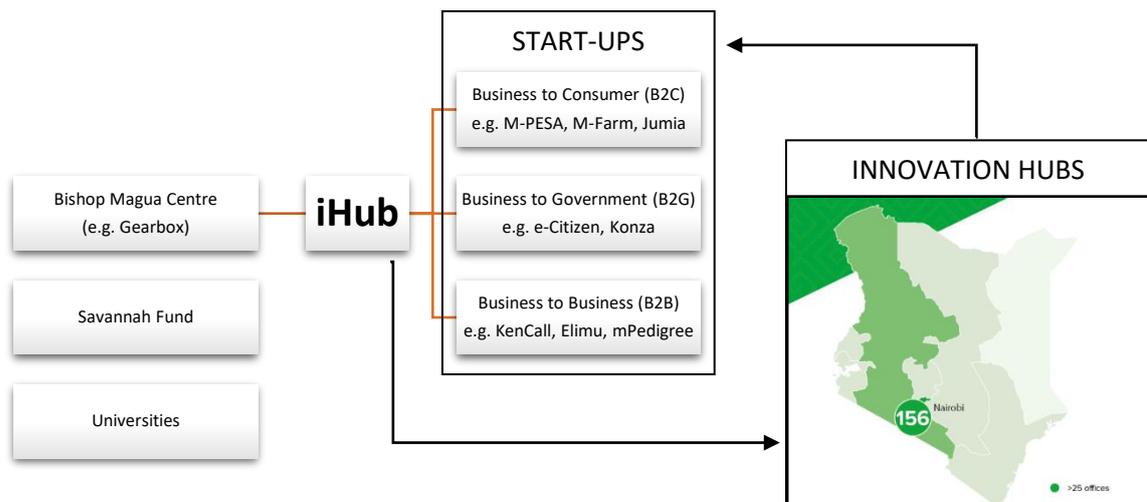
As emerged in the first chapter, Kenya is a major player in East Africa regional economy, thriving tourism, agriculture, logistics and telecommunication. However, its growth is still characterised by several challenges, including poverty, inequality and weak private sector investment (www.worldbank.org/en/country/kenya/overview, last updated: Sept-30.2019). Kenya is the 89th most complex economy in the world according to the Economic Complexity Index (i.e. ECI) in 2017 (www.oec.world/en/profile/country/ken). In addition, Kenya is characterised by a young and growing population and, in general, a skilled workforce (www.clustercollaboration.eu/tags/kenya, Apr-13-2018). Furthermore, from a political point of view Kenya made great progresses, recently becoming more democratic, but remaining among nations lead by an hybrid regime (www.infographics.economist.com/2020/democracy-index-2019/index). However, the most recent political reform in 2010 brought devolution in a new political and economic governance system; this resulted in promoting greater investments and public services delivery at local levels (www.worldbank.org/en/country/kenya/overview; last updated: Sept-30-2019).

Moreover, the country demonstrates to be committed in a structural transformation in the economy, aiming to improve its economic diversification including industrialization in its “Vision 2030” (www.vision2030.go.ke). However, in Nairobi Innovation Week in 2018, it has been emphasized that Kenyan government still need to support innovation and the development of SMEs to ensure the success of the country’s industrial development and competitiveness (www.clustercollaboration.eu/tags/kenya, Apr-13-2018). As acknowledged, clusters’ model is a way to improve innovation and SMEs development at a regional level. Several are the opportunities for Kenya, the most relevant experiment of government effort in improving technology is the high-tech cluster called Silicon Savannah or Konza technopolis.

‘Silicon Savannah’ is a name widely used to describe the flourishing IT industry in Konza and in general in Nairobi neighbourhoods (Chirchiatti, 2017). This cluster is located along Ngong Road, a major roadway. A specific four-kilometres stretch of the road has become the centre of Kenya’s high-technology development, starting from 2011 (De Beer et al., 2017).

Figure 9 - Structure of the Silicon Savannah Cluster

Source: the author and www.vc4a.com



The specific Konza City project was launched in 2013 by the Kenya's government, that established a SEZ (i.e. Special Economic Zone) (www.konza.go.ke/wp-content/uploads/2019/09/Teaser.pdf) creating investment opportunities in the area. The project is part of the broader one, the Kenyan Vision 2030 (www.konza.go.ke). The Konza project is not concluded, in fact project completion date is settled for 2038, entailing universities, housing and business parks construction (www.konza.go.ke). The cluster is considered an innovation hub in the country, since it is where the start-up building ecosystem organizations are concentrated (i.e. 156 innovation hubs in 2018) (www.vc4a.com/venture-finance-in-africa/2018-research/kenya). It was initially founded by a former specific company that settled Nairobi's Innovation Hub (also referred to "iHub") in 2010. From that former initiative, Nairobi became an important centre of attraction and development for start-ups and technological innovation (De Beer et al., 2017). Over the three years following iHub's launch, the company has been able to incubate over 100 start-ups (De Beer et al., 2017). In the very first years of cluster's development, the iHub community created Gearbox, a new makerspace at the Bishop Magua Centre, a place for designing and prototyping. Another organization in the same centre is Savannah Fund, an actual accelerator set up by several partners, including the iHub, focusing on finding and investing in East Africa's start-ups (De Beer et al., 2017). The cluster hub is a relatively small space in which there is a high density of hubs; within the cluster, the individual company is an innovation hub itself, that is generally independent, and that intensively interacts with other companies by sharing physical spaces, Internet access, human resources, capital, and other resources (De Beer et

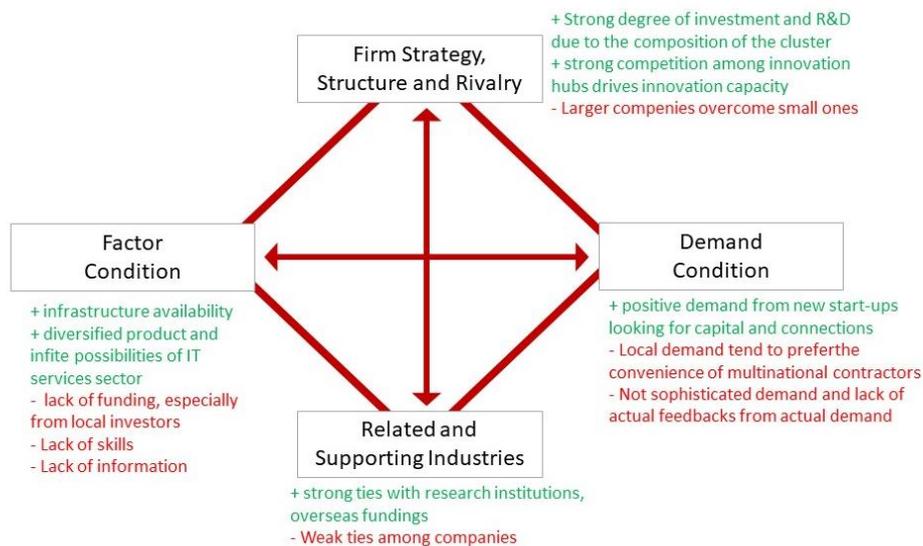
year plan seeking to improve the digital infrastructure (ICT Authority, 2014). It also provided infrastructures for the development of the innovation hub.

Although the cluster benefits from the government support and it has been created specifically purpose from a project, researchers agree that there are problems linked to lack of skilled people and financial sustainability. The problem of finding enough investments and financial resources in the area is caused by the fact that financial framework is dominated by overseas funders, donors and private investors (Haikin, 2018), which, in order to decrease risk of their investments, tend to prefer biggest companies, while many small local Kenyan companies are left apart and struggle to find capitals. At the same time, focusing only on large companies create an information gap between offer and what is the local demand and distorts incentives. From a demand point of view, however, purchasers tend to prefer the convenience offered by multinational contractors over buying from local organizations (Haikin, 2018). Other primarily problem is due to skills gap in the tech system (Chirchietti, 2017; Haikin, 2018), including modern project management techniques, iterative product development and engagement with end users (Haikin, 2018). Even if it designed to have the form of a “Marshallian cluster”, the Silicon Savannah has an hub-and-spoke structure, in which all companies and other actors in the cluster are linked to the principal hub, iHub. IHub is the entity that firstly gave birth to the cluster. However, the intention seems to create more and more linkages among the different actors to give birth to a stronger network. Zeng (2008) argue that many technopoles are constructed, on the opposite of other clusters that grow spontaneously (Zeng, 2008). This is the case of Silicon Savannah, in which a former government plan, together with the help of a principal company, gave birth to the cluster, with the specific objective to develop a high-tech hub for the region.

Porter’s diamond is a powerful instrument to underline some principal characteristics of the cluster. Figure 11 illustrates Porter’s diamond for Silicon Savannah and the various points are explained below.

Factor conditions: the cluster has several positive factor conditions, such as infrastructures, including connections availability and communication connections. Infrastructures in the cluster have been provided by the Kenyan government under a long-term project promoting development and innovation in the country.

Figure 11 - Silicon Savannah Porter's diamond
 Created by the author



Another positive factor is the kind of product. Indeed, IT services is a sector in which innovation is always in the foreground, therefore products offered are potentially infinite and incentive innovations. Factor condition shows also to have serious issues for their sustainability. In fact, problems emerge when analysing capital availability and skills gap among offer and demand in the labour market. Studies of economic performances in the area showed the widespread poor economic performances of start-ups in the area (Haikin, 2018). Lack of specific skills, both from a managerial point of view and from a technological one is also underlined by empirical evidences (Haikin, 2018).

Demand Conditions: unfortunately, demand conditions are not positive. In fact, local demand tends to prefer the convenience of multinational contractors rather than local ones. Local demand seems to be not sophisticated thus not so interested in sophisticated new IT services. On the contrary, demand from the point of view of new start-ups looking for capital, connections and aiming to develop their ideas are increasing, however they struggle to work efficiently.

Firm strategy, structure and rivalry: as constructed to become a technopole for research and development, strategy and structure of the firms in the cluster are a positive element, because as start-ups they constantly aim to innovate their products and to develop their structures. In addition, strong competition registered in the area, especially among innovation hubs, drives up innovation capacity of the region. A negative element from the rivalry point

of view is that small companies are not able to compete with large ones because of lack of capital. This last feature generally decreases innovative capacity of the area.

Related and supporting industries: the presence of research institutions, which have strong ties with hubs and start-ups, is increasingly important. However, researches showed the need to improve connections among the different start-ups to improve the knowledge transfer and to improve information of the market.

In conclusion, the cluster shows both positive and negative aspects. The cluster was born from a project created by iHub and the government, which has been determinant for the development of the system, constructing infrastructures and creating an environment for innovative activities. Although the positive perspectives in the first years, the project has some problems when coming to practice, due to the lack of local investors and lack of managerial and technological skills. The technopole seems trying to imitate, at least partly, the Silicon Valley example, and more likely other high-tech regions in developing countries, such as China and other successful clusters in East Asia. In Silicon Valley case, several studies indicated the necessity of high skilled labour as a precondition for the growth of an ICT based entrepreneurial cluster (Bresnahan et al., 2001). Therefore, the system needs to be implemented in order to incentive higher levels of education and knowledge transfer among companies and in order to increase information of the feedbacks derived from the demand prospective. In addition, researchers found that the majority of money being spent on tech or social tech in Kenya, is directly or indirectly going overseas, thus not in Kenyan companies (Haikin, 2018). This aspect is relevant from the point of view of the importance of the cluster for the East African Region, since the idea in clusters' theory is that the dynamism, both economic and social, created by the cluster becomes a source of regional development by being spread in other industries and sectors, promoting the development of entire regions. However, Africa is a continent with low-level of innovation, the project made by Kenya is courageous and deserves to be taken into consideration. The try is also due to the fact that tech hubs have been helpful for the development of poor countries for example in Asia in recently years.

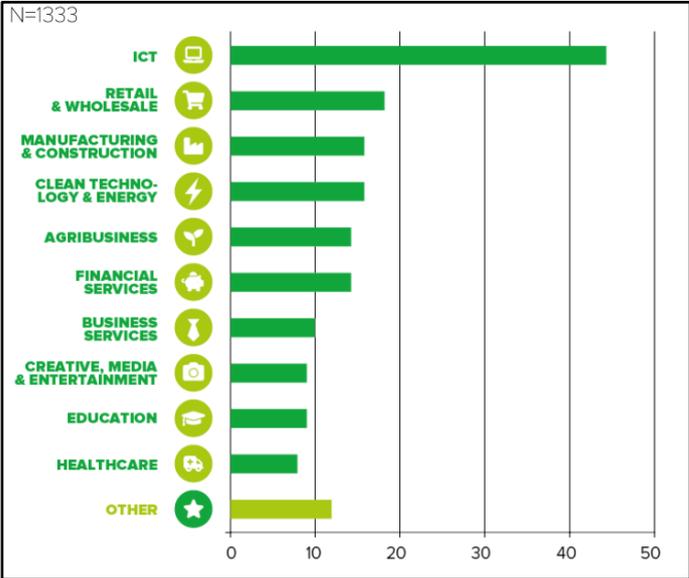
Although the Silicon Savannah case is quite far from the one of Silicon Valley, some similarities are found in empirical results. In Silicon Valley, the successful factors have, among the others, primarily been universities, government, professional entrepreneurs, venture capital, industrial research centres, service providers (Engel, 2015). First of all,

Berkley and Stanford Universities integrated disciplines such as business education, commercialization, electronics and computer technologies in their teaching plans already in the early 1990s, contributing in enhancing the general knowledge and skill levels in the region. In addition, there was an open collaboration of universities with private industry helped early high-tech firms flourish (e.g. in 1951, among others, General Electric, IBM, Eastman Kodak, Lockheed, Varian, and Hewlett-Packard). In Silicon Savannah cluster universities exist and are part of the cluster in the sense that they developed their own hub, to help start-ups. Although this can contribute to increase the overall knowledge level in start-ups, it is not clear what is their level of participation in the iHub network. However, it does not seem that they have a predominant role in cluster development. Secondly, United States government, initially driven by the run-up to World War II and the Cold War, military research funded engineering efforts in universities, national government and private firms in Silicon Valley. This long-term governmental spending in R&D in the Valley can be considered as a catalyst for the technopole fast development. In Kenyan case, government has been important but with a different perspective. In fact, the first incentives from which the cluster was created has been a government decision, with specific policies from national and local government, which also provides capital to cluster's initiatives. Universities permitted to have in place a highly educated and skilled workforce, matching the local labour demand. Moreover, people in the valley demonstrated to be innovative and entrepreneurial (i.e. professional entrepreneurs), being able to have innovative ideas without being afraid to take the high probability of risk implied in innovative ventures. On the contrary, Silicon Savannah lacks also of entrepreneurial skills, therefore this is another point in contrast with Silicon Valley. Moreover, investments in early Silicon Valley start-ups were provided by operating corporations, not investment firms. Over the time, professional venture capital investors appeared, investing their own capital also in the early-stage companies. Venture capital investors have provided critical capital to nascent companies in the early 2000s (i.e. VC invested in the US was for one-third or more regularly destined in Silicon Valley). The large presence of venture capital influences the behaviour of start-ups in Silicon Valley, accelerating innovation through their active involvement. Nairobi can boast a success in attracting venture capital, indeed in 2019 75 per cent of the ventures in Kenya were invested in the capital city (www.vc4a.com/venture-finance-in-africa/2018-research/kenya/), especially in the ICT sector, as can be seen in figure 12.

As Silicon Valley expanded, so did the bounty of research centres. In addition to Federally funded research labs, many major corporations also created R&D centres and other independent R&D centres are born from university relationships.

Figure 12 - Kenya's ventures overview per sector

Source: www.vc4a.com



In Nairobi there are multiple research centres, especially funded by the government and in addition provided by the iHub (i.e. the first company established in the cluster), this is for instance the case of Bishop Magua Centre. Results of this R&D however are not evident. Finally, specialized service providers (e.g. lawyers, design professionals, recruiting firms, investment bankers, incubators, and accelerators) quickly emerged in Silicon Valley. These providers not only provided tailored professional services but are also willing to share the profits of the venture as a payback. In Silicon Savannah start-ups are attracted in the region especially for the presence of Hubs which provide basic business services (i.e. networking activities, marketing assistance, market research, fast and reliable Internet access), however these hubs are not specialised in a specific industry sector.

The picture of Silicon Savannah that emerged from the comparison with Silicon Valley showed many points in common, such as importance of government role, the presence of venture capital, of industrial research centres and services providers. On the contrary, other important factors are missing, such as the commitment of universities in the development of the cluster and, as a consequence, lack of skilled workers and lack of entrepreneurial skills in the labour market.

Therefore, cluster policy developed by both the local and the national government seem to ignore some important factors related to the specific area. Some author already evidenced problems with cluster policy when imitating the success of regional ‘best practices’ (Brouwman & Hulsink, 2000), as each cluster and region has unique characteristics, eventually a place-specific approach, more realist, should address to the specific cluster, such as improving specific skills and providing more specific services and infrastructures. Some author evidence the fact that in supporting high-tech clusters authorities often ignore the question whether the preconditions for such clusters are present in an area (Brouwman & Hulsink, 2000). Moreover, other suggestions for cluster policies related to ICT-hub creation have been suggested studying the Silicon Valley case as well as other successful similar case studies in Europe and Asia (i.e. Ireland, Scandinavia Israel, India, Taiwan) (Bresnahan et al., 2001). Suggestions provided by the authors are essentially summarized in investing in education, having open market institutions, encouraging multinationals to invest in the cluster, making entrepreneurship easier. Studies done in developing countries such as in Wuxi, a city in Jingsu province, Eastern China, evidenced that the crucial factors for knowledge-based cluster development lie in the external effects of untraded interdependence, learning, tacit knowledge and absorption (Chou et al., 2011). There is a strong suggestion in the literature that the formation of flows within technical communities are essential elements for industrial innovation and learning (Chou et al., 2011).

In conclusion, although the IT hub in Nairobi has some potentials, mostly created by the capacity of the government to build a favourable environment, work is still needed to be done in order to make the cluster more profitable and to complete the innovative environment with the right skills, enhancing the attractiveness of the region for economic activities.

4.2 Suame Magazine: a Manufacturing Cluster in Kumasi, Ghana

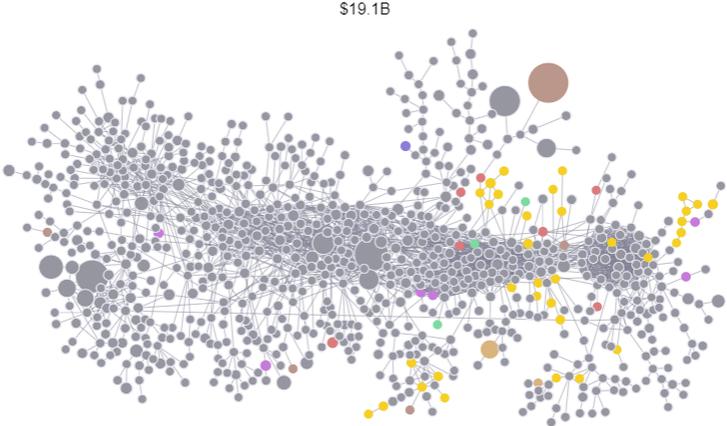
Ghana is part of the West Africa subregion. According to the world Bank organization, Ghana has been one of the fastest growing economies in the world in 2019 (www.worldbank.org/en/region/afr/overview, last updated: sept-26-2019). The country is putting important efforts in improving economic and social conditions. From an economic point of view, Ghana’s economy continued to expand in 2019, including a consistent reinforcement of non-oil sectors growth. In particular, growth was driven by a strong

recovery in the services sector which grew by 7.2 per cent compared with 1.2 per cent in 2018 (www.worldbank.org/en/country/ghana/overview; last updated: sept-26-2019).

Its population is about 29.7 million (2019 data), increasing together labour force volume, that reached 12.8 million (2019 data) (www.data.worldbank.org/indicator/SL.TLF.TOTL.IN?contextual=default&end=2019&locations=GH&start=1990&view=chart; last updated: Dec-20-2019). Recently Ghana taken major strides toward democracy under a multi-party system, and progressing with freedom (www.worldbank.org/en/country/ghana/overview, last updated: Sept-26-2019), providing Ghana with a consistent factor of social capital. According to the Democracy Index 2019, Ghana is in a good ranking being among the “Flawed democracies” (www.infographics.economist.com/2020/democracy-index-2019/index). The country still shows problems with its economic development, that appears fragile. In fact, the World Bank Organization evidences that the country’s major challenges in 2020 lays on maintaining a fiscal consolidation stance and staying on a sustainable path (www.worldbank.org/en/country/ghana/overview, last updated: Sept-26-2019), underlying that Ghana’s energy sector is in dire financial conditions and without remedy, this poses serious fiscal risks in the coming years.

Figure 13 - Ghana product space (2017)

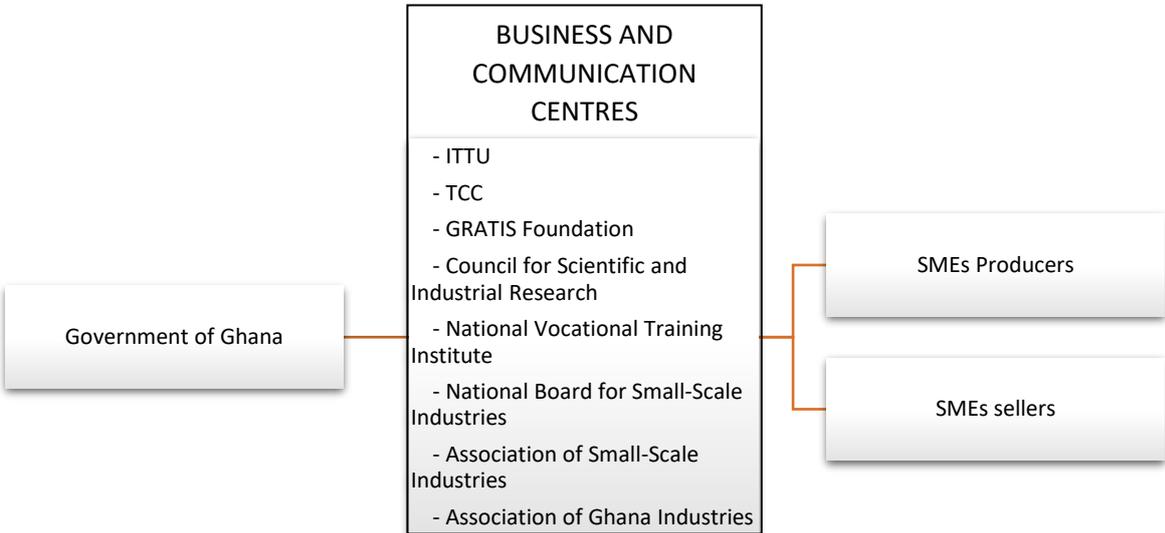
Source: www.atlas.cid.harvard.edu/explore/network?country=83&year=2017&productClass=HS&product=undefined&startYear=undefined&target=Product&partner=undefined



From a first overview of the country, it emerges that the government of Ghana has an active role in the economic and social development as it implements economic diversification. However, Ghana’s development is still strongly linked to the energy sector. The Ghana’s product space, showing the economic complexity of the country, is showed in figure 13.

Case study in this country is the manufacturing cluster near the city of Kumasi in Ghana, also called the Suame Cluster or Suame Magazine because the site, established as an armory, once housed a military magazine—has a long history of craftsmanship (Zeng, 2008). The cluster had an important role in the economic history of the country. This cluster is also relevant when talking about African economic development, as inside the cluster there are some of the most mature SMEs in the continent, born in 1920s. The cluster has had success, as it is one of the biggest clusters in the continent. The cluster is primarily composed of SMEs, that clustered and developed together with governmental help and information centres. The structure of the cluster is illustrated in figure 14.

Figure 14 - Structure of the Suame cluster in Kumasi, Ghana
Created by the author



In the 1920s emerging artisans first developed excellent skills. Craftsmen in the area of Kumasi where excellent blacksmith, goldsmith and were able to make brass artefact. These artisans carried family businesses, and then they started to group together, remaining independent firms. The cluster actually arose between the 1950s and the 1960s. In the cluster history, the key turning point happened in the 1970s and it was driven by a government decision. In fact, the government placed restrictions on the importation of vehicles and parts of vehicles. This caused issues for the larger companies importing goods and they lost their predominance in the market, while at the same time it helped strong local producer enterprises. As a consequence, with this policy the government increased the level of competition and rivalry in the industry locally. Governmental policy increased the number

of producers in the area, due to the local demand for the specific kind of goods, and it increased the importance of local producers already established and with long experience in the sector, while larger enterprises lost part of their power in the market. Another positive factor was the highly growing population. Due to this factor, the need for infrastructure in the area increased and this was rightly noticed by the government that acted in that sense. Moreover, growing population in the 2000s created a high level of labour market pooling. This factor reflects on both low and high level of technical skills, important especially in the vehicle industry characterised by a highly skilled and technological level.

From a structural point of view, and as can be foreseen by the history of the cluster, Small and Medium Enterprises (SMEs) dominated the specific industrial district, and the situation is still the same. In general, the number of workers in each company goes from 5 to 10 (Zeng, 2008). SMEs in the cluster are mature and workers are skilled and experts in their specific sectors. This, however, is somehow negative because workers, are not feeling the need for innovation, limiting the growing capacity of firms. A research about level of education and learning in the Kumasi cluster developed in 2013 showed that in most cases workers skills have been assimilated during the years throughout apprenticeship (i.e. 74 per cent of interviewed) and workers feel they are capable enough for the job; causing strong limits to innovation and continuous learning (Waldman-Brown, 2013).

Recently, the main activities pursued in the cluster by these SMEs are: vehicle repair, metalworking, and selling engineering materials, automobile parts and food (Zeng, 2008). As can be easily notice, the industries related to the cluster are multiple and they are much different from the initial one in the cluster in 1920s, demonstrating the ability to adapt the abilities developed during the years to new related industries. In fact, over the years, the producers also developed specific skills, in particular engineering capabilities spread in all firms. Even if clustering permitted to create synergies in the area, resulting in an increasing competitive advantage, previously studies underlined that there are only few working relationships among producers and/or sellers. As a consequence, knowledge transfer and spill-overs. Communication centres are important actors in the cluster development. Between 1971 and 1986, Intermediate Technology Transfer Unit (i.e. ITTU) helped the cluster to expand and to gain technological knowledge and related skills, improving also innovation capacity. However, in the first years of 2000s, trade became more profitable than manufacturing in the cluster. Over the years, different activities have been pursued and

moved from the initially trigger factor, namely the presence of skilled artisans, helped by with policy decisions. Actors in the cluster were able to reinforce downstream activities and industries, using existing local human capital and materials and creating new opportunities. Concerning related factors, the area is witnessing a proliferation of various associations that are trying to move the focus on social welfare. As already stated, enterprises, especially producers and sellers, are not easily grouping together and many associations serve as a help to make them be able to lobby, in order to obtain better services and create more synergies.

However, government of Ghana recognized the need for a knowledge upgrade and transfer. In general, Ghana's government has had an important role, as it established institutions to ensure growth and expansion. These institutions have been able to help the development in the area, by ensuring technology transfer, training, management and marketing skills development and loans. In addition, government policy has prioritized the public provisions of facilities throughout "Business and communication centres".

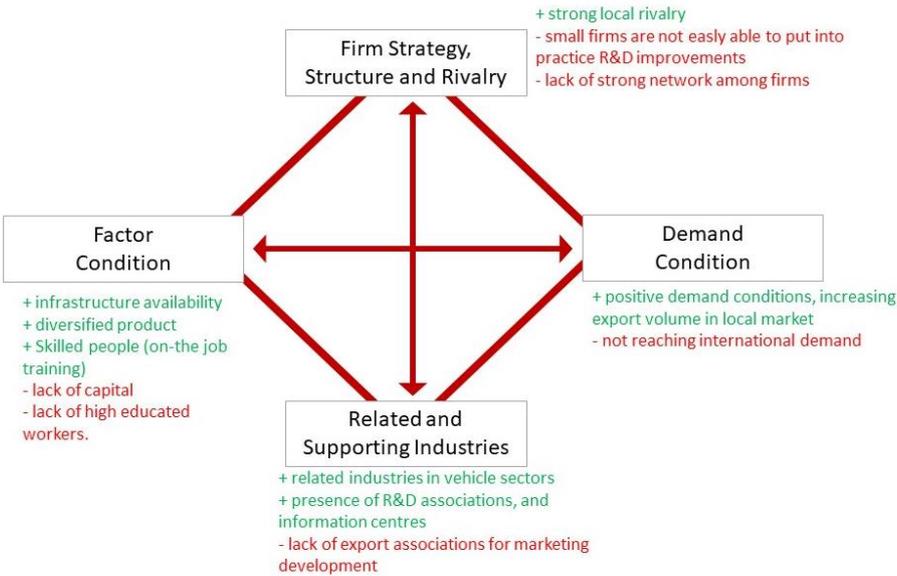
In an effort to develop small-scale enterprises, the government of Ghana put into practice an active policy during the years. In particular, it decides to create various institutions to ensure their growth, helping economic actors from different perspectives. These public organizations continuously collaborated with the MSEs (i.e. Micro and Small Enterprises) of Suame, especially concerning technology development and transfer, vocational and apprentice training, business management and entrepreneurship training, working capital and hire-purchase loans, women's enterprise development, business-assistance funds, and marketing (Zeng, 2008). Government effort have been notable, in fact apart from the already cited ITTU, there are several organizations working together with small enterprises. These are, for example: Council for Scientific and Industrial Research, National Vocational Training Institute, Ghana Regional Appropriate Technology Industrial Service (i.e. GRATIS Foundation), National Board for Small-Scale Industries, Technology Consultancy Center (i.e. TCC), Association of Small-Scale Industries, Association of Ghana Industries, Private Enterprise Foundation, Intermediate Technology Ghana (Zeng, 2008). In particular, the presence of TCC, ITTU and GRATIS Foundation support technological development and technology transfer. However, lack of resources in terms of capital investment capacity results in serious difficulties in putting into practice innovations and R&D improvements, that are not easy to insert in the everyday work of SMEs.

In addition, trade data must be considered. The external market, it can be said that it is not widespread. Trade export is, in fact, mostly concentrated in the local and Western African countries, with Congo, Nigeria and Cote d'Ivoire constituting more than 90 per cent of export destination (2017) (www.atlas.cid.harvard.edu). This is also recognised to be a result of lack of aggressive marketing practices (Zeng, 2008).

In conclusion, among the success factors there have surely been the skilled craftsmen already existing in the area, which along the time had improved their professional skills both as artisans and as successful entrepreneurs, spreading their knowledges in related activities. Furthermore, the strong and continuous attempt of the government to provide public support to the development of SMEs. In addition, associations focused on motor vehicles repair, not only in manufacturing quality products, i.e. focused on the development on complementary services and products allowed to diversify the product and enhance product complexity. Among the negative factors, there is the presence of many mature SMEs, where both entrepreneurs and workers do not feel the need to innovate. Innovation upgrading is also costly and capital in the area are not sufficient in order to do so.

Suame Magazine has a Marshallian cluster structure, although with few connections in the network. The cluster formed in a spontaneous way. The Porter's diamond of the competitive advantage of the cluster is illustrated in figure 15 and explained below.

Figure 15 - Suame Magazine's Porter's diamond analysis
 Created by the author



Factor condition: factor condition is of primary importance for the cluster. In fact, here it can be seen strong positivity on skilled people in the labour market. The number of actors is also positive as labour market pooling is driven by population growth, and consequently labour force increasing. The product is also suitable for innovation, as the sectors is good for having multiple innovation possibilities and related activities. Government also provided infrastructures in the area and this created more possibilities to trade development, that now became the most profitable activity.

Demand Conditions: local demand is important for the cluster as trade is concentrated in West African countries. The area developed an increasing demand for vehicles. However, the difficulty lays in reaching international demand for vehicles, due to poor marketing practices and strong outside competition that is not easy for Kumasi cluster to overcome.

Firm strategy, structure and rivalry: firm structures are primarily of Small and Medium Enterprises. These enterprises constitute the core actors in the cluster. However, their dimensions do not permit them to acquire enough capital to spend in R&D. Furthermore, capital investments are needed to put into practice in the everyday work innovation developed from the multiple associations present in the area.

Related and supporting industries: Multiple industries are present in the area, especially created by the Ghana's Government to help small enterprises to develop. In addition, there are related industries linked to the vehicle sector. Marketing support is needed in order to enlarge the external market.

In conclusion, the cluster showed to have positive factors. Skills are important in the vehicle sector and the labour market is promising from this point of view. In addition, as in many other countries, increasing population constitutes a positive factor as labour market growth represents a resource for the country. Government role has been crucial in the cluster development, with its policies (i.e. restrictive policy in the 1920s was an incentive for new producers to start new business in this sector), and its investments in infrastructures and business and communication centres. However, multiple associations have not been able to create a strong network among different SMEs, and this limits innovation possibilities.

Suggestions for policy makers should be to encourage formal training, as at the moment most of the skills are acquired with the learning-by-doing method. Participation in training is needed in order to improve the further development of the cluster. Policy makers should

also give different technological support, since now it results to be too costly for SMEs to buy, use and implement new technologies developed by the researchers and associations. Last thing that may be crucial for the cluster is to ensure and to implement marketing support to the activities, since trade is more and more profitable than manufacturing it is important to enlarge the market also outside the Western African countries.

As in Ghana, vehicle industries have been important in many other countries and constituted a source of economic development in countries both in developed and developing states. The Suame Vehicle cluster can be compared with the vehicle industry in Thailand, where the vehicle industry has been successful. In the early 1980s Thailand's government strategy aimed to attract car manufacturers in a specific area, with the objective of creating incentives for other actors, especially suppliers, enhancing the benefits of clustering together; the final step being to develop purely Thai supporting industries thanks to technology transfer. Thai case has been noticed for being a successful industrial upgrading for Thailand, resulting in an outstanding export performance in the world market in the 1990s and 2000s (Kohpaiboon & Jongwanich, 2013).

In particular, in order to do so the government created specific infrastructures making the environment more attractive. (Lecler, 2002). Thailand emerged as the leader in the ASEAN countries (i.e. Association of Southeast Asian Nations) when costs began to matter and exports were necessary, and in the early 2000s it demonstrated to be the only ASEAN member state with strong probabilities to become a global player (Lecler, 2002). At that time, in fact, the weight of the automotive sector in the national economy was greater in Thailand than in any other ASEAN countries (i.e. Indonesia, Malaysia, Philippines) (Lecler, 2002). In Thailand, strong industrial clustering has been observed in the automotive industry. Kohpaiboon and Jongwanich (2013) observed that the automotive industry in the cluster reached a level where the local content of a locally manufactured vehicle is approaching 100 percent (Kohpaiboon & Jongwanich, 2013). In the Thai case government policies surely have to be taken into account. The positive effect of policies results in their ability to attract Japanese part-makers, as they constrained vehicle makers to buy parts locally (Lecler, 2002). This factor was important to increase the number of producers in the area. Similarly, this happened in the Ghana case study, where in 1920s Ghana's government similarly closed the market for vehicles and their parts. The difference in this is that Thailand was able to attract several skilled workers and Japanese companies, that had the possibility to make more

investments. These is caused by the fact that Thailand had the biggest domestic market in the ASEAN countries. Therefore, local demand demonstrates again important for the cluster development. Moreover, Several researchers focused on the topic of vehicle clusters in developing countries, underlying important factors of the cluster, with its strengths and weaknesses. For example, Lecler (2002) identified important points to take into consideration in understanding whether vehicle and vehicle parts markets in emerging countries will be successful. They are, for example: national attitude toward liberalization of exchanges for vehicles and parts and openness of the market, the quality of infrastructures; the development of supporting industries; or the knowhow of manpower and managers (Lecler, 2002). All these factors seem to be positive in the Suame Magazine case, demonstrating the potential of the cluster in becoming a source of growth in the area.

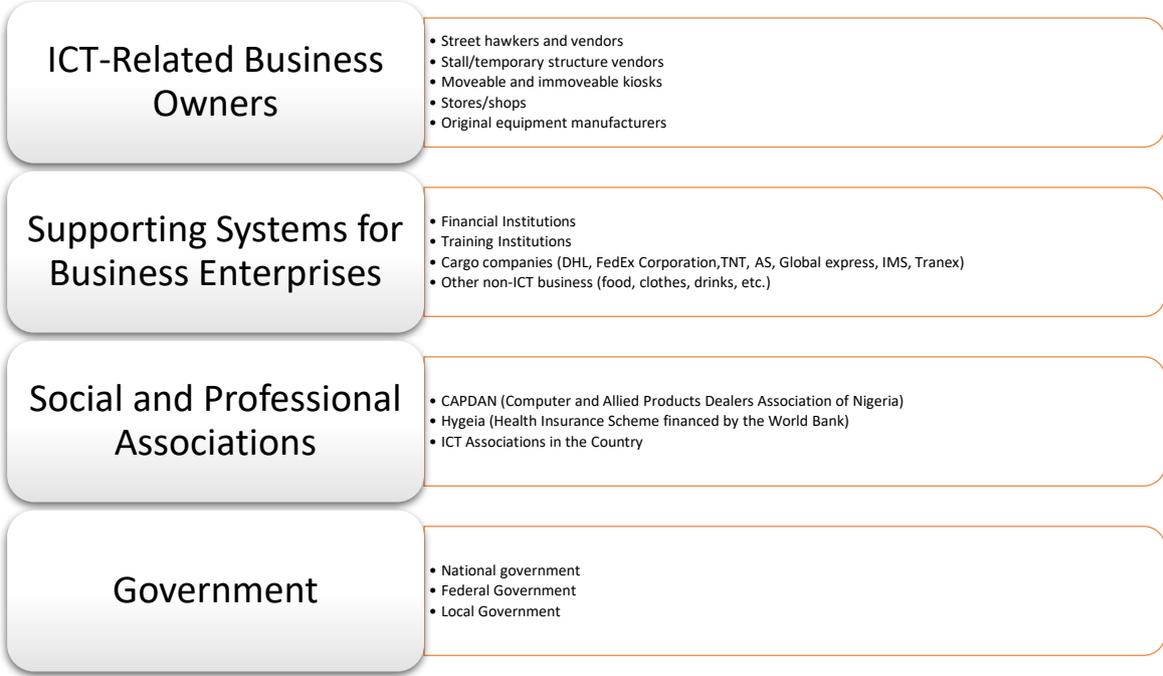
4.3 The Otigba Computer Hardware Village in Nigeria

Nigeria is the main economy in West Africa, with a GDP that counts for the 70 per cent of the entire region as in 2018. Approximately Nigeria's population accounts 202 million people, half of West Africa's population, and it is one of the largest populations of youth in the world (www.worldbank.org/en/country/nigeria/overview; last updated: Oct-13-2019). Nigeria returned to be a democracy in 1999 and now it is organised as a federated structure with 36 autonomous states. The central government gives significant autonomy to states (www.worldbank.org/en/country/nigeria/overview; last updated: Oct-13-2019). Democracy Index 2019 put the nation into the group of "Hybrid regimes", but before 2015 it was among the "Authoritarian regimes" (www.infographics.economist.com/2020/democracy-index-2019/index). However, the main structural problem is that its economy is based on export commodities, especially concerning energy goods. Figure 16, which reports the volume of Nigerian exports divided by type of good, shows how the Nigerian economy is characterised by low level of complexity. Nigeria is the 124th most complex economy according to the Economic Complexity Index (i.e. ECI) in 2017 (www.oec.world). Lack of economic diversification is common in African states, as this is why industrial clusters policies can be helpful in the state.

Figure 16 widely exhibits how exports are concentrated in petroleum oils and gases, while on the contrary the other sectors, both agricultural products and services products appear to have little importance in export revenues. This situation clearly shows a predominance of external factors affecting economic performances of the country and therefore affecting also

capital, and therefore it was provided with essential transportation infrastructures (e.g. port, large airport).

Figure 17 - Otigba Cluster's participants
 Created by the author based on Zeng (2008)



In a first phase of its development, the area become quite rapidly a major business district. The development of the district was initially driven by the already existing commercial relationships for ICT products import and the increasing demand for computers in the Nigerian local market. Thus, by 1998 many buildings were already converted from residential to commercial. This situation already increased both the number of enterprises involved in this business as well as the employment rate in the area. It is important to notice that all these improvements evolved from private investments and the governments, both local and national, even if they improve their awareness for this industry, does not helped the cluster formation.

The second phase began with the transformation from mere trading to production in 2002-2003. This was supported by the increasing knowledge acquired from the actors in the cluster and increasing skilled people, expert in the ICT industry. In addition, the increasing prosperity of the area attracted other actors, such as retailers, importers of computer computers and notably, builders of computer clones. In this phase the OCV became an actual hub for computer imports, improved by increased capacity to create new products and skilled people who became able to repair old computers. In 2003 the cluster was already able to

attract buyers from outside the local market, especially from West African countries. Strong competition exists within firms in the cluster, especially driven by prices, pushing firms to become more and more efficient. Over the years related actors have been attracted in the area driven by its rapid growth, in particular financial institutions, banks and IT training centres have equally located around Otigba Street despite the space constraint; according to the report by Bamiro (2003), the cluster has an area of 325 square kilometres.

In the history of the OCV formation, there are remarkable elements which make this cluster to be unusual for the African continent (Oyelaran-Oyeyinka, 2006; Zeng, 2008) especially in Nigeria. First, the ICT industry implies a high-knowledge level and skilled people at work. In fact, many of the employees in the cluster are graduated at the university (Oyelaran-Oyeyinka, 2006), and remarkable is the degree of learning and diffusion of tacit knowledge through apprenticeship. Second, the cluster evolved without the help of the government, in any level. Government policies have been substituted by private associations. The most relevant has been the CAPDAN (i.e. Computer and Allied Products Association of Nigeria) which has had a remarkable role in supporting the cluster, that over the years faced several institutional constraints concerning security and lack of infrastructures. Third, notable was the structure of the network. Indeed, most of the enterprises were MSEs (Micro and Small Enterprises) with strong and dense inter-firm relationships. Cooperation was in particular encouraged by lack of public support and increasing competition from the outside, especially from production in Asian countries. The major competitors are China, Malaysia and Dubai in the Middle East (Oyelaran-Oyeyinka, 2006).

In just over a decade the Otigba Computer Village has become the IT hub for the ECOWAS (i.e. Economic Commission of West African States) and attracted the attention of important global players in the industry of computer components, such as Intel (Oyelaran-Oyeyinka, 2006). The external effect of the OCV has also been caused by skilled workers that quitted the cluster in order to set up their own businesses outside the specific area and industry, however maintaining their good relationships with the cluster.

As emerged, the cluster was born without any help from the Government, and in relatively few years it became a hub for the entire Western Africa region for trading and production of computer-hardware and peripherals. This is a particular case study because Nigerian economy is based on petroleum related goods export. The OCV created dynamism and opportunities to grow in the specific area, achieving considerable amount of links and

relationships also with other actors outside Nigeria. However, development effects have not significantly contributed on the overall country growth. As in 2017, indeed, Nigerian economy was still focused on petroleum goods and reports from the United Nations in 2019 are confirming these data. Several problems can be found in the development of the cluster and these will be explained in the next chapters using both theory and empirical evidence.

Otigba Computer Village has a Marshallian cluster structure with strong connections among the various actors, especially among small and medium enterprises. The cluster is the result of a spontaneous agglomeration of enterprises due to external factors. In addition, the OCV has shown to have positive effects in the area, being successful in expanding the core technology of firms through apprenticeships and knowledge sharing (Yoshino, 2010). The Otigba Computer Village previously described is now seen from the point of view of the Porter’s diamond. The main findings and conclusion are explained below.

Figure 18 - OCV Porter's diamond analysis
 Created by the author



Factor conditions: in the OCV the factor condition is a source of advantage. In fact, in the Information Technology and Computer industries skilled people are important. The specific sector is in fact a high knowledge one and skilled workers are essential in order to provide quality products and services. As seen in chapter 4, into the area the level of education among inhabitants and participants in the cluster is quite elevated and most of the workers are expertise in the sector. This is a growing factor even because the area is able to attract skilled people, due to the blooming environment. Participants in the cluster demonstrated to be not only skilled with respect of Computer and Technology industries but also as good

entrepreneurs. Another important factor condition has been the location. In fact, the city of Ikeja is the former capital of Nigeria. Indeed, the city is provided by a port and a big Airport. The number of physical connections and transportations was surely a source of advantage with respect of many other places in Africa. Last positive factor is the kind of products in the industry. In fact, the products can be diversified thus providing infinite possibilities of innovation capacity, both for the computer products and peripherals. The only negative factor found is that the area is small, and this can result in space constraints.

Demand conditions: local demand has been helpful over the years for the development of the cluster. In fact, the increasing demand for computers in the city and neighbourhoods provided a strong incentive to growth in the early 2000s. There is no reason to think that this factor will change its positive trend. In addition, the demand increased also from the countries nearby in West Africa. A negative aspect that restricts the cluster capacity to grow in the global market is that the local demand do not anticipate the trend of the industry, thus the local demand, even if increasing, limits the innovation capacity of the producers in this sense.

Related and supporting industries: due to the lack of incentives provided by various levels of government and lack of effective regional policies, related industries have been indispensable for the cluster development. In fact, private associations such as CAPDAN has been a powerful element which was source of strong coordination and knowledge transfer. Important related industries attracted by profits opportunities in the area are Financial and Training institutions. Both kinds of related industries are important partners which provide factors to competitive advantage capacity. The growing cluster seems to lack of quality suppliers. In fact, most of the suppliers are second-hand material suppliers. Thus, quality of the products offered could remain steady at a low level even if innovation and skilled people are at work.

Firm strategy, structure and rivalry: strong and increasing competition is an incentive for cluster participants to innovate and improve the quality of products and services offered. Inside the cluster, strong rivalry exists among small and medium enterprises and producers. Even rivalry from outside the cluster, especially derived from Asian producers, enhance the general level of rivalry. High rivalry is a positive factor according to Porter's theory because it encourages cluster participants to innovate in order to enhance their competitive capacity. This could be not true for this specific cluster, in fact competition in the cluster is driven by

prices and not by new products and quality products. This results in low registered level of R&D investments. Thus, as already mentioned in demand conditions, the demand does not seem to be requiring even if increasing in numbers.

In conclusion, Otigba Computer Village seems to have positive features with respect of factor conditions and related and supporting industries, derived by skilled workforce and entrepreneurs, good location rich of connections, financial and training supporting activities and the ongoing and predominant work of private associations that enhance cooperation level. Negative factors are the poor role of the government which should be more influent and proactive. On the contrary, government role has been neither strong nor effective over time. It seems that policies are driven by extracting financial resources from the cluster, which seems to develop on its own, without benefitting of any incentive from the government. Therefore, government at various levels should be more committed especially in enabling firms in the cluster to create major number of links even outside the cluster and providing incentives in R&D investments for firms. In fact, due to the competition based on low prices, is clear that producers are not able to provide funds to the product and technological innovation investments. In addition, demand is not requiring thus the innovation incentive is even more mitigated.

Furthermore, the clusters, especially those concerning the high-technology sector, have been the most successful for gaining international competitiveness, in China as well as in Singapore, in Republic of Korea and in India (Yusuf et al. 2008). Yusuf et al. (2008) studied some of the ICT clusters in these countries and developed a list of conditions to focus on while analysing clusters in the ICT sector; these are: *identification of the product, cluster geography, capability to lead finance and to do business, incentives, urban labour market, innovation, angel investors and venture capitalists, urban setting, infrastructures and services, anchor firms, increasing and young population, demand condition* (Yusuf et al. 2008). The same elements are likely to be important in ICT clusters in Africa and some of them has previously been illustrated in chapter three in this paper. Similarly, empirical evidences emerged by specifically examining China's industrial clusters. The study developed by Zeng (2011) showed that the most important success factors in China have been: *efficiency gains, low entry barriers, production and labour specialization; local government support; spill-overs through inter-firm links, state firms and foreign firms; entrepreneurial spirit and social networks; innovation and technology support from*

institutions; and support from industrial associations (Zeng, 2011). As a result, the success factors emerged in the Asian case studies are in line with cluster theory, as they emphasise factor conditions (i.e. skills, localisation, capital, product innovation), firm structure, strategy and rivalry (i.e. innovation, efficiency, specialization of work, low entry barriers, entrepreneurial spirit) and related industries (i.e. support from industrial organizations, support from institutions, spill-overs through inter-firm and foreign-firm links, anchor firms). While fewer importance in these studies is given to the demand condition, the role of the government is emphasised, and its importance is underlined as it can liberalise the market and create Special Economic Zones (Zeng, 2011), create infrastructures and urban services, give incentives for cluster development (Yusuf et al. 2008).

There are both positive and negative factors to consider in this sense when comparing the previous results with the Africa case study. In particular, efficiency due to economies of scale is not a strength of the cluster. Moreover, lack of resources and strategies aimed to enhance innovation and R&D decrease the potential growth of the cluster. In addition, the government and institutions do not help the industry by providing resources and incentives for R&D investments. Infrastructures in the cluster also can be improved in order to create the right urban venue, attracting more and more skilled workers. In the Asian case studies analysed by Yusuf et al. (2008), successful ICT clusters in East Asia grew in an urban region that was able to attract high skilled people, that usually have high-quality lifestyle preferences and have plenty of options. Housing and quality infrastructures are therefore essential in this context.

However, the ICT industry in Lagos have also multiple positive features. ICT products have high innovation potential that leads to the possibility to diversify the offer, important factor especially in the long-term prospects. As underlined in chapter three, choice of the product is relevant, for example is the same good can be produced in multiple variables and gives various possibilities for its innovation and renovation the cluster has more growth prospects. The presence of skilled workers and entrepreneurs is important in every kind of cluster, and even more in ICT clusters, as they are knowledge-intensive (Yusuf et al., 2008). The capacity to attract venture capital permits to have the availability of risk capital, that is one of the keys to cluster development as noticed in the Asian case studies (Yusuf et al., 2008). Public sector venture capitalists or venture funds are inclined to take fewer risks. Local venture capitalists in Asia become most useful after the industry had gained some traction and accumulating

managerial experiences and technological capacities (Heirman & Clarysse 2007). This factor suggests that venture capitalists are likely to increase over time because of the positive experiences of previous firms in the cluster. In the area firms created a good network with firms in the same sector within the cluster and with anchor firms. The strong and continuous network is guaranteed by private associations, demonstrating the collaborative approach of the firm within the cluster, despite without incentives from institutions. Increasing and young population translate in higher levels of energy and initiative and is more likely to generate dynamism, an element which enhance the cluster's performances and reputation. As in the case of Hsinchu Science Park in Taiwan (China), Bangalore in India and Cambridge in the United Kingdom, clusters benefit from the existing social-dynamically environment (Yusuf et al. 2008). Most of the clusters in the Asian cases growth momentum was at least in the very beginning from local or regional markets, confirming Porter's analysis (Porter, 1990). Larger, affluent, and faster-growing markets are advantageous for clusters as they are for most kinds of industrial activity (Porter, 1990; Yusuf et al. 2008). In Nigerian local market this dynamism is not present, but the local market was one of the first factors boosting SMEs in the Lagos state to improve their production, as the specific product has received more interest from a demand point of view (i.e. demand for computers).

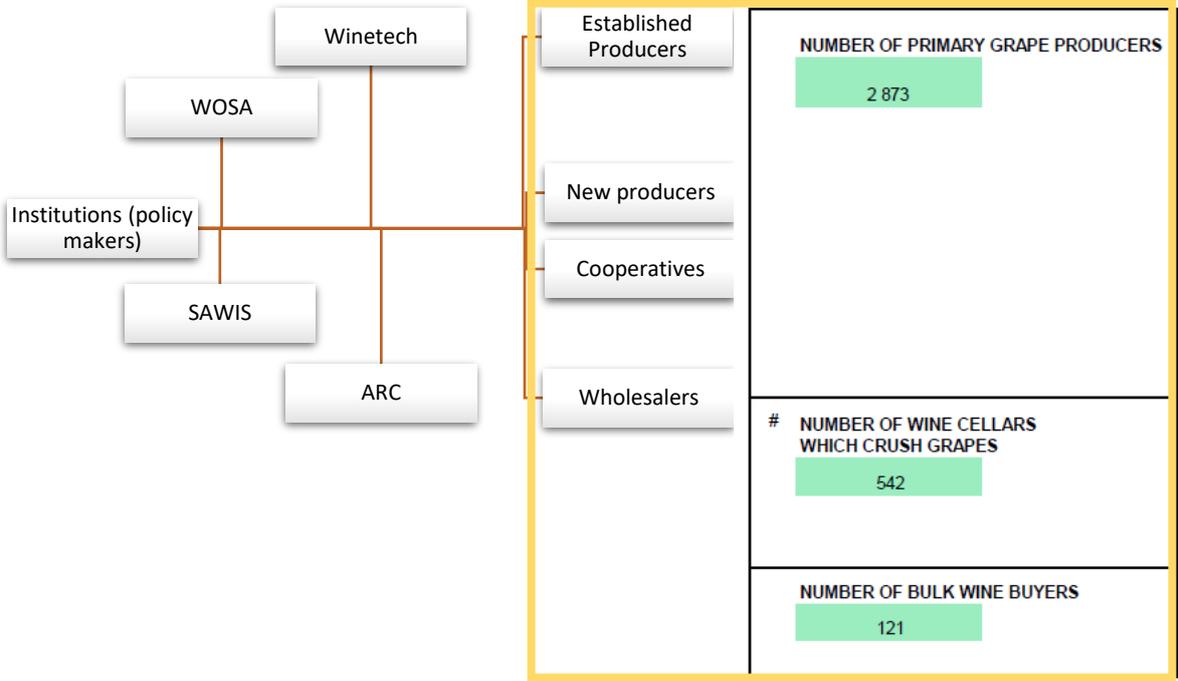
4.4 The Wine Cluster in South Africa

South Africa is the largest economy in Southern African countries. Despite the other states in Southern Africa, its history brought the country to become richer than its neighbours, and its economy is one of the most diversified in the continent, with almost each sector being important in the composition of GDP. In last years, growth in South Africa has been underpinned by structural challenges, such as income inequalities, as underlined in chapter one, that especially emerged from the economic crisis and socioeconomic imbalances (UN, 2019). Moreover, even if the South African economy is complex, its level of complexity has become lower compared to a decade prior (<http://atlas.cid.harvard.edu/countries/246>). The degree of democracy is a positive factor in the nation, it is in fact included in the major "Flawed democracies" in the world (www.infographics.economist.com/2020/democracy-index-2019/index). In this context, the wine cluster case study is depicted in this session as an example of successful policy decisions by the government.

The Wine cluster in South Africa is wide geographically spread (Yoshino, 2010), and not confined in a precise area such as in other examples. In fact, the cluster is intended as the

entire wine industry in South Africa, although the concentration of producers is in Western Cape (i.e. Stellenbosch, Paarl, Swartland, Bredekloof) (www.sawis.co.za/info/download/2018_eng.pdf).

Figure 19 - Structure of the South African wine cluster
 Source: the author and www.sawis.co.za (2018 data)



The Industry is characterised by major players and several, increasing little producers, creating a network with more or less strong links among enterprises. In particular, cooperatives play an important coordination role. The wine industry in South Africa counted only for 0,57 per cent of global wine exports in 2017 (www.atlas.cid.harvard.edu), and this is not a promising result considering that the industry is strongly export-oriented, situation that is helped by the economic partnership with European Union, the first export destination (www.atlas.cid.harvard.edu/explore?country=246&product=833&year=undefined&productClass=HS&target=Product&partner=undefined&startYear=undefined).

In order to analyse the cluster, it is initially important to underline that the definition and identification of wine clusters remain the subject of debate in the scientific community (Begalli et al., 2014), as sometimes the definition can concern a wine region, a local production system, an industrial district and so forth. Due to the diverse definition of wine cluster, the case study analyses the cluster meaning the entire wine industry in South Africa, that is concentrated in the Western Cape.

Producers in the cluster are essentially divided into 4 segments: established producers, new producers, cooperative producers and wholesalers (Zeng, 2008). Years ago, the cluster was only composed by established producers and cooperatives, selling low quality products because of the quota system that was imposed before 1994. After that year, the quota system was eliminated, and the market was liberalized. New producers entered, with different perspectives, capital capacity and knowledge and capabilities. In 2003, two third of total grape crushed was used to sell basic wine sold in bulk.

At the same time, they received strong support from institutions. For example, technical support is provided by ARC (i.e. Agricultural Research Council), a partially state-funded science council for the agricultural industry (Zeng, 2008). Furthermore, a certain level of coordination in wine research is guaranteed by the Wine Industry Network for Expertise and Technology (i.e. Winetech) is a hub that allocates findings to research on competitive bidding and then it spreads knowledge in an intensive network.

In addition, on research funding, other organizations work to develop the industry growth. In particular, WOSA (i.e. Wines of South Africa) is a private organization that acts on behalf of some South African wine exporters. It is recognised by the government, but it is fully independent and non-profit organization. WOSA's mandate is to promote the export of South African wines in key international markets. Furthermore, SAWIS (i.e. South African Wine Industry Information and Systems) is a non-profit organization which disseminates detailed statistics on wine production and prices within the industry actors, serving as a reference point for strategic planning.

Export is of vital importance for the cluster and for the wine industry in the country. In 2003, the Free Trade Agreement signed between South Africa and European Union, helped the industry. In fact, it brought duties down to zero for wine imports. Only that year, 42 million litres of South African wine was imported in the European Union.

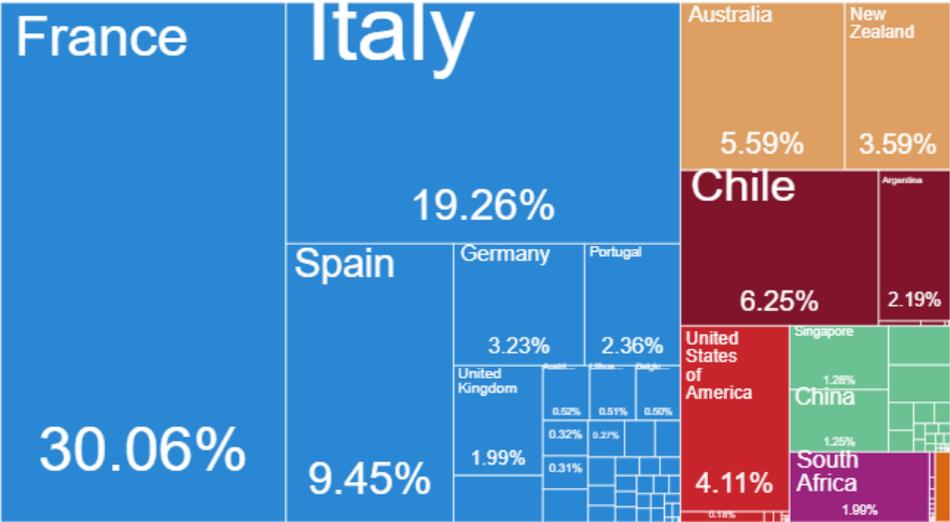
Two broad sets of policy initiatives. One, already mentioned, is the liberalisation of the wine sector, which was highly regulated before 1995, with the quota system. Quotas were especially driven by cooperatives of producers. The key success factors of the policies were mostly technical factors and organizational factors. Thanks to public and private organizations, in fact, innovation was pursued in every aspect of industry. Cooperation and collaboration among different producers and institution permitted to boost innovation,

because for the coparticipants of the various initiatives costs and risks were shared. Collaboration mechanism is an important factor within a cluster, which enable a region to pool labour markets, to develop forward and backward linkages and creates knowledge spill-overs (OECD/WTO, 2019). In addition, established producers have been able to exchange production knowledge through collaboration, in the form of special forums and participation to associations for example.

Although the positive experience and success factors, among the different categories there is a gap performance, especially for established wine producers. The most successful companies were the one with greater available resources dedicated to innovation initiatives, the same factor made them able to work closely with institutions involved in marketing, especially for export-oriented initiatives. New producers are more export-oriented and, although they are small, and so they have small capacity, they highly contribute to the acknowledgement of South Africa wine industry worldwide because they have been able to enforce their brand. The acknowledgement of small new producers outside the boundaries of the local market appear to be disproportional to their actual capacity. As a result, there is evidence of a wide disparity in performance between the different industry segments.

Figure 20 - Who did export wine in 2017?

Source:
www.atlas.cid.harvard.edu/explore?country=undefined&product=833&year=undefined&productClass=HS&target=Product&partner=undefined&startYear=undefined



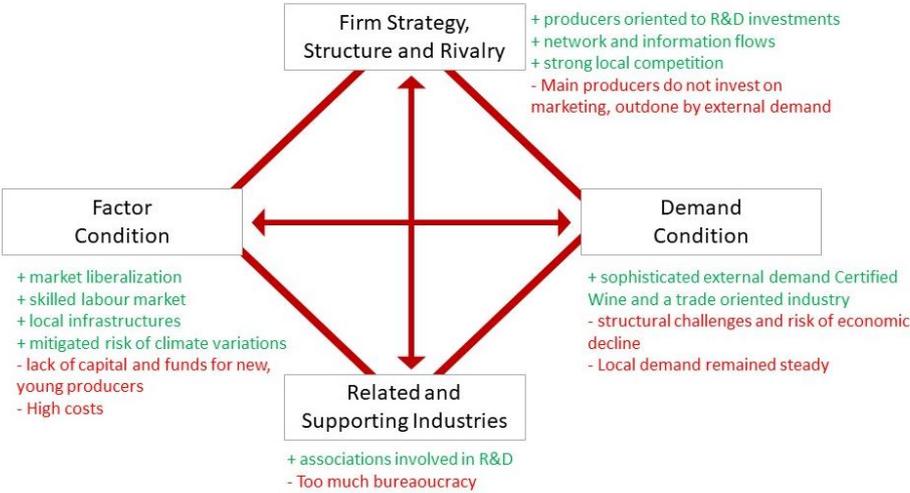
Growth in exports has been less impressive than other new world producers and, as can be seen in figure 20, although South Africa is the main wine exporter among African countries, the importance of wine industry in the global market is far from “big” and acknowledged wine industries such as the French and the Italian one, but also developing countries such as

Chile. From the description of the cluster and its participants, it emerged that the problem is not about lack of innovation efforts or lack of technical knowledge and research. On the contrary, the critical point lies in marketing, especially concerning cooperative. New producers, in fact, seems to be more effective in export expansion than cooperatives and established producers because of more knowledge in marketing and brand development. Success recorded in technology and innovation must be spread through marketing and there is need for marketing training. Cooperation level must be enhanced in this sense.

An overall consideration about this case study is that policy has been important to give the possibility to develop the cluster, liberalizing the market and giving to new entrants the possibility to learn from already established producers. The three most influent factors in the South African wine industry are: the role of networks and associations, specific policy incentives and the need to innovate to compete in the global market.

The wine cluster and wine industry in South Africa is depicted using the Porter’s diamond as follows.

Figure 21 South African wine cluster Porter's diamond analysis
Created by the author



Factor condition: the cluster shows positive conditions in terms of factor conditions. Positive factors are derived by skilled labour market, increased by the work experience of the area, market liberalization in the 90s, which continue to help the development of the industry in which several producers are entering every year. In addition, local infrastructures are available, and the risk of climate variations seems to be moderated, even if in vineyard industry climate is relevant. However, even if multiple factors are available their market is

characterised by high costs of inputs, resulting in make factors less available for small producers which are entering the market. These little new producers and actors miss the right capital capacity in order to put in practice their skills and new ideas.

Demand conditions: if local demand is not a great source of incentive for the development of the cluster, outside demand results to be increasing over time, making the cluster to be more international trade oriented. In addition, the increasing external demand shows to be characterised by sophisticated individuals. This fact emerges by the data that shows an international demand in which Certified Wines are the most required in exports. Structural challenges in economy remain, weakening the local demand effect in the industry. These structural challenges are, for example, lack of country prestige in the international environment and gap among high-level and low-level earners, which limits the spending capacity of a large part of the local buyers. This decrease the innovation incentive for producers that are not oriented in international trade.

Related and supporting industries: related and supporting industries are mainly characterised by associations, both private and public, involved in R&D. However, the diffusion of results derived by R&D is limited due to the lack of capital for many of new market entrants. In addition, the presence of much bureaucracy limits the cooperation among cluster participants and make it costly.

Firm strategy, structure and rivalry: as already mentioned, produced strategy is trade oriented and oriented to R&D investments. Network of information flows among producers, especially in cooperatives, is also a source of competitive advantage. Strong and increasing local competition create an intense incentive to innovate and become more and more efficient. However, largest players in the clusters seems not to be marketing oriented, therefore losing advantage in a trade-oriented industry. At the same time, smallest players, which are the newest and more marketing oriented, lack of capital capacity to put in practice their ideas. This result in an easy outdone of the South African wine industry international offer by other international players.

In conclusion, South African wine industry has some potentials such as quality products, skilled labour force, strong and sophisticated international demand, proactive firm strategies oriented on R&D and international trade. However, South African industry performances seems to be outdone by lack of marketing investments and lack of capital for many of the

new producers, situation that makes the industry less competitive with respect of the industries in the world, for example Wine Industry in Chile and Australia. The positive development of the clusters, especially in the 1990s, is to attribute to the government decision to liberalize the market, eliminating the quota system. In addition, the economic agreement between the European Union and South Africa in the early 2000s which cut down duties, increased the level of exports of wine products to the European union, and export volumes are still significant especially to the United Kingdom and Germany.

As Italy has a strong wine culture, as well as globally acknowledged wine industry (e.g. in 2017 Italy was the second wine exporter worldwide, with 19,6 per cent of global market share) (www.atlas.cid.harvard.edu) it is useful to compare the characteristics of Italian case studies and the South African one previously illustrated. Another reason to study the Italian case, is that Italy where a relatively latecomer among old world wine producers (Bell & Giuliani, 2007) seeking to catch up with earlier movers, especially in last decades in which the global wine industry has had a transformation. The Italian situation can then be somehow compared with the South African one, that emerged after two break points: liberalization of the local market and abolishment for custom duties when exporting to countries in the European Union. With respect of industry dimension, the number of Italian enterprises in the manufacture of wine from grape industry in 2016 was 2.061, while the volume of wine produced in that year was 50.900 hectolitres (www.statista.com). As illustrated in figure 19, wine industry in South Africa is constituted by 2.873 grape producers as in 2018, with 824,3 million litres (www.sawis.co.za/info/download/2018_eng.pdf).

Differences in export performances can be explained by looking at several factors, in addition to the one already emerged from the Porters' diamond. In particular, a study developed in Soave Wines Consortium under the 2007–2013 Rural Development Plan of the Veneto region. In the case study, some important factors emerged (Begalli et al., 2014): *a common strategic direction, with the cooperative model as its point of reference; common social and natural resources; shared goals that are pursued through a different marketing mix; common territorial identity*. The strategic direction is a unifying factor among firms in the Soave Wine Consortium. The structure in which firms organise is the cooperative model, that focuses on member participation and in their coordination. Collective brands are used in order to identify the mark of the specific territory, which constitutes a strength for the cluster, while the use of business brands is less common. Each company uses the territory

according to its own strategies, and cultural and social assets. Even with shared goals, different marketing mixes are used, as the cluster gives importance to potential factors that lead to diversification. For example, wineries seek new niche markets and higher added value, but they choose different tools for this objective (e.g. export growth, packaging capacity growth, production of bulk wine to improve the current assets balance, investments concerning the production process and its efficiency, and the establishment of synergies in purchasing, logistics and distribution activities). However, the different tools, in the specific cluster, do not seem to affect the collaborative environment among firms in the cluster, as they have the same strategy and objective.

In 2007, Bell & Giuliani evidenced the importance of knowledge networks in wine industry, especially taking into consideration the Italian case. The study highlights three factors that showed contribution to the positive performances (Bell & Giuliani, 2007): *more intensive linkages among firms in the cluster; stronger knowledge resources and innovative activities in the individual firms more intensive interactions with extra-cluster sources of knowledge, including public research and technology organisations*. In the cited studies, different success factor emerged. In particular, it is clear the importance of cooperation and propensity to network, even if accomplished through different ways (i.e. cooperatives structure or knowledge linkages). Furthermore, social and natural resources are important, the more the cluster is performant, the more knowledge base has the firm (Bell & Giuliani, 2007). Natural resources are also represented by the territory, and a strong territorial brand become important especially in the international market. In addition, knowledge research appears to be important. Finally, extra-cluster relationships and exchanges of resources and knowledge are relevant for the development of the cluster and its success.

Comparing the Italian empirical evidences in the cited studies and the South African one, differences emerge. South African wine industry demonstrated to have R&D potentials, due to the commitment of private firms to invest in research and innovation, especially through collective organizations supporting cluster activities, such as SAWIS, WOSA, Winetech and ARC, these last one provided by the government. By means of these organizations, and many more, firms in the cluster forms a strong network with continuous linkages, comprehending also the public institutions that helped the development of the cluster. In this context, knowledge flows, intra-cluster interactions and R&D efforts are largely present in the cluster. On the contrary, extra-cluster interactions are missing. Related industries do not

collaborate in the development of the cluster, in fact all the organization that have relations with firms in the cluster are wine industry-oriented, with the only exception of ARC, which is developed by the South African government to help all agricultural activities as a whole. In addition, what is missing in the African case study is a strong territorial brand. Before the 1990s due to the application of the quota system, large producers began to make low-quality wine. This situation changed after the liberalization of the market, but wine from South Africa was considered in the international market as low quality one. Especially new producers are trying to promote their new quality brands, but with poor results due to lack of capital to dedicate to marketing activities. Although this situation, from last data (www.sawis.co.za/info/download/2018_eng.pdf) emerged an increasing in export of Certified Wine, thus were the provenience is certified. This can be considered a sign that the territorial brand is beginning to gain importance and strength. Although this trend, creating a strong international territorial brand still appear to be one of the main issues.

Chapter 5

Results and Critics

Results

The paper embodies several data about the current situation of the African continent, from an economic, demographic and political point of view. Africa is a growing continent, with positive forecasts for its future development but also with multiple structural problems. Currently African growth involves economic, demographic and political factors, being some countries implementing their level of democracy. Still, in multiple cases African development is underpinned by structural challenges. GDP growth rate materialization has been lower than expected in 2019, meaning that the continent continues to have several challenges to face. These issues are in part determined by historical dependence from the outside resources and powers.

Data showed that the situation in Africa is changing. Some African countries are among the fastest growing economies and among the ones that increased the most their GDP in 2018 and 2019, and forecasts for 2020 are positive as well. Despite the positive forecasts, the country has several problems, such as dependence from external factors in a system that make countries and institutions be linked to their colonialism history. This situation has been underlined, for example, by the book “Why Nations Fail” by Acemoglu and Robinson (2012), in which path dependency in some countries, such as Ghana, Kenya, Democratic Republic of Congo and many others, caused the formation of institutions that hinder people empowerment because citizens are not part of the decisional process (i.e. presence of extractive economic institutions). Anyway, the case studies showed a positive trend toward the formation of inclusive institutions; more democratic political systems have been implemented more or less recently in the specific countries studied, with the only exception of South Africa where the Democracy Index is decreasing.

In the first analysis of the continent, it has been divided into five regions and differences emerged. The five African subregions, i.e. East Africa, North Africa, West Africa, Southern Africa and Central Africa, differ especially for different growth speeds and different source of income. The division of the continent in several subregions served as a way to identify different characteristics among the regions. East Africa is currently the fastest growing

subregion with a 6.2 per cent growth rate observed in 2018 and with a certain degree of economic and social stability that make the situation being more sustainable in the long run. North Africa is the second subregion looking at the GDP growth, with positive external factors and increasing domestic demand, but with risks caused by a negative balance of payments. Third growing region is West Africa characterised, more than other regions, by persistent vulnerabilities caused by its dependence to the Nigerian economy. Nigerian economy, in fact, is linked to energy goods extraction and trade. As a consequence, the region itself is driven by a fluctuating performance in incomes creation. Sahel region in West Africa is also a critical area as it is characterised by conflicts and civil wars. Moreover, Central Africa is experiencing a bad period because it is exiting of a recession ended in 2018 and civil wars make the region being not stable. Finally, Southern Africa is the region with the lowest economic growth, due to its dependence from South Africa economic performance that recently is having a slowdown.

As emerged in chapter one, all the various subregions analysed are involved in structural challenges. Among the others missing of skills and knowledge in the labour market and missing of research capacity. These problems are linked to lack of capital. Lack of skills and knowledge make the continent being struggling to gain international competitiveness, because of the increasingly knowledge-intensive industries that characterise the global economy. What emerged by the UN dataset based on 2018 data and 2019 forecasts data about the different subregions in Africa is that the continent is improving its short-term growth opportunities, with different speeds within its boundaries due to more or less conflictual situation and external positive factors. It also emerged that Africa is growing with significant medium-term vulnerabilities caused by the structure of the economy and institutions. These structural challenges are primarily been identified to be lack of innovation and lack of diversification. Lack of innovation, as reported by the “World Economic Situation and Prospects” by the UN is a key structural challenge for developing countries and Africa is the last continent in the Global Innovation Index ranking in 2019. Lack of diversification is in part a consequence of lack of innovation and the problem is linked with the need for ceasing the dependency from natural resources and energy prices, as well as from weather conditions in economies where the agricultural sector is predominant. This dependency is the source of short-term growth in some countries but constitutes a risk for sustainable development in the long run. Thus, economic diversification means to have several sources of income creation that mitigate this risk.

Some positive factors are however common within the African boundaries. In fact, intra-African investment continued to grow in 2018, as a sign of continuing dynamism within the continent. For example, South Africa, even if with a weak economic performance and with its structural challenges, remained the most extensive investor in other African countries; Kenya contributed significant FDI to East Africa as well as Nigeria did in West Africa; Egypt and Morocco are major investors in North Africa (www.brookings.edu/blog/africa-in-focus/2019/10/09/figure-of-the-week-foreign-direct-investment-in-africa/, Oct-09-2019). That is, the strongest economies in the continent are more and more involved in investments in their subregions. Although Africa still faces many challenges, it is slowly demonstrating an improvement in its economic vitality, in broader terms looking to overall data as showed in chapter one, as well as in the form of clusters of enterprising that are contributing to national, regional, and local productivity as emerged from the case studies in this paper. In addition, the world is beginning to look at the African continent in a different way, making African countries and their institutions become important actors in the international environment.

As emerged, Africa's ability and efforts dedicated to innovation are low for global standards. In general, lack of innovation is a problem in the continent but in the medium term, innovating is the key to make a structural transformation to more sophisticated activities, implying the creation of a more diversified economy. Lack of innovation is caused by lack of capital, lack of skills and in some case lack of opportunities, together with the presence of non-committed institutions and governments especially when talking about innovative activities, as they tend to rely in natural resources, such as in the case of Nigeria. In this context, clustering can be an opportunity for enterprises to overcome constraints (Zeng, 2008) due to these challenging situations. In fact, industrial clusters can be key determinants for development, as seen in chapter three. The mechanism through which industrial clusters are source of development is that they put together several actors and resources, which coordinate their activities and collaborate creating a special environment that produce opportunities for new entrants. The new entrants can be actors from the same sectors, other sectors, related activities, skilled people, financial activities, and so on. The basic idea is that groups of firms located close to one another take advantage from their proximity and are more efficient than they would be separately. Especially Micro and Small enterprises can have benefits from clustering, because the mechanism of the industrial clusters could help

them to overcome their size constraints and to improve their sales performance and to find new markets (Yoshino, 2010).

Since innovation capabilities are a main element in cluster success, crucial questions when studying industrial cluster structures in underdeveloped and low-income countries are whether knowledge and technology can be put to work to generate economic growth and whether these clusters are sustainable and replicable (Nadvi, 1999). Multiple studies have as objective to raise awareness of these private sectors growth dynamics in developing countries. For example, Asian countries experienced a rapid growth in the past years, particularly China, India, and Japan, among others, achieved incredible results in part thank to SEZs and industrial districts. China, for instance, in the past 30 years has had a phenomenal economic growth with an unprecedented development (Zeng, 2011), and multiple studies agree in giving to new reforms, aimed in creating industrial clusters a central role for China's remarkable development (Zeng, 2011).

The aim of the paper is to understand the role of industrial clusters in the development of African countries and to give suggestions on what should be implemented to help clusters formation and development. Four case studies have been chosen to understand if the industrial clusters can be an effective tool to increase the economic performances of African countries. The case studies in this paper underline some positive and negative factors. These are:

- *Silicon Savannah* in Kenya, East Africa. The new innovation hub in Nairobi and its neighbourhoods;
- *Suame Magazine* in Ghana, West Africa. The vehicle construction and trading cluster in Kumasi;
- *Otigba Computer hardware Village* in Nigeria, West Africa. The ICT cluster in Lagos,
- *Wine industry cluster* in South Africa, Southern Africa. The wine industry primarily concentrated in Western Cape.

Economic and social factors in the environment of these case studies are different. Silicon Savannah is situated in Kenya, East Africa. East Africa subregion is the fastest growing region in the continent and is the most promising region in Africa as its growth seems more sustainable than in other areas. Economic and social stability result in more positive

developing potentials in the long run. In East Africa, most of the problems are caused by non-inclusive income growth, as per capita data unveil income inequalities. Dependence from international funding is another source of risk both in the long and in the short term. More in details the cluster is situated in Nairobi, Kenya, a country that is a major player in the regional economy. However, its level of complexity is still relatively low for global standards and issues such as income inequality and weak private sector investments threaten its economic development. Kenya is also becoming more democratic, with more inclusive institutions. Suame Magazine in Ghana and OCV in Nigeria are in West Africa. West Africa is the third region in terms of GDP growth in 2018 was West Africa. More than other areas this one is characterised by persistent vulnerabilities. Nigeria counts for the majority of income in the area and, because its economy is based on commodity prices and oil and gas exports the overall growth rate of the area has been always fluctuating. A critical part in this region is the Sahel area, in which persistent conflicts and civil wars do not permit the creation of a stable social, political and economic environment in many countries. In this area Ghana is the only country that is considered a “flawed democracy”, while Nigeria exited only in 2015 a long period of authoritarian political environment according to the Democracy Index. More in details, Ghana has been one of the fastest growing economies in the world in 2019 and the government is making efforts in improving both economic and social conditions, with consistent reinforcements of non-oil sectors and services sector. On the contrary, Nigerian economy is not diversified and its economic performances are strongly linked to export of energy goods such as petroleum oil and gases. The Nigerian population is one of the largest populations of youth in the world. Finally, South African wine industry is situated in the Southern Africa subregion. Southern Africa is the African subregion with the lowest economic growth. This is caused by the dependence of South Africa that counts for the majority of the regional incomes, while other economies are weak. South Africa is experiencing a period of recession due to economic crisis that undermined its growth potential. The country has a diversified economy that is experiencing economic issues primarily due to “western world” problems. The country registers the higher level of income inequality, being the more polarised among the southernmost African countries. Other countries in the subregion still face strong poverty, famine and instability. South Africa is one of the more diversified economies in the continent, with relatively high level of economic complexity for African countries’ standards. However, its level of complexity has become lower compared to a decade prior.

Figure 22 - Case studies, an overview
 Created by the author

Name of the cluster	Silicon Savannah	Suame Magazine	Otigba Computer Village	South African wine industry
African region	East Africa	West africa	West Africa	Southern Africa
Country	Kenya	Ghana	Nigeria	South Africa
Shape of the cluster	Hub-and-spoke	Marshallian cluster	Marshallian cluster	Marshallian cluster
Nature of the cluster	Created	Spontaneous	Spontaneous	Spontaneous
Positive factors	Government participation, infrastructure, product complexity, research institutions, overseas investors, strong competition, investments in R&D,	Local and international rivalry, related industries, positive local demand and increasing regional demand, location, infrastructures, role of the government, skilled people,	Skilled workers, entrepreneurial capabilities, increasing local and regional demand, intra-firm cooperation, support from financial and training institutions, lack of government participation in the cluster.	Positive policies, skilled workers, infrastructures, R&D investments, strong network, many organisations for cooperation, cooperatives, local competition, sophisticated external demand,
Negative factors	Lack of local capital, Lack of skills, feeble information system, local demand is not sophisticated	Lack of a strong network, lack of capital, lack of high educated workers, lack of strong marketing activities.	Local demand is not sophisticated, Price competition, low R&D investments, space constraints	Steady local demand, risk of economic decline, lack of funds for new small producers, lack of marketing strategies, lack of a strong territorial brand

As explained in session 3.4, positive factors for industrial cluster success are collaboration, coordination, product and network complexity, geography, skills, regulatory environment, role of the government and institutions, access to funding and culture. Figure 22 underlines some commonalities among clusters derived from the case studies that linked to these factors.

In the growth process of all clusters studied, R&D played an important role, demonstrating that this kind of activity can be developed even in underdeveloped countries, where education is low. R&D efforts are implemented by both public and private associations in South African Wine Industry, in Silicon Savannah and in Ghana, while in Nigeria private organisations are the core of R&D activities. The same public and private institutions are involved in the coordination of activities in the clusters creating links and more or less strong networks. Coordination seems to be a problem only in the Silicon Savannah, this cluster, however, is recently born and it is in the first phases of its development. Moreover, institutions are working to enhance this aspect. Silicon Savannah, in particular, is the demonstration that some countries in the area are trying to diversify their economy, enhancing their economic complexity and international competitiveness. Currently, lack of innovation incentives has emerged both in Suame Magazine and in OCV for different reasons. Suame Magazine in Ghana is one of the oldest clusters in Africa. As a consequence, the maturity of enterprises within the cluster lower innovation incentives. Moreover, in OCV competition is driven by prices thus quality and innovation are not relevant. Generally, what is missing is the sophisticated local demand, an important factor for innovation incentives, as underlined especially by Porter's studies (Porter, 1980). Since innovation incentives do not easily come from the environment in which these clusters are situated, the role of institutions in this sense become even more relevant.

A part from the Nigerian case study, where the cluster developed without any help from local or central governments, public institutions have been important for clusters growth. In some cases, such as in Ghana and South Africa, right policies helped the industry in general and in some others such as in Silicon Savannah active participation of the government was essential for the formation of the cluster (i.e. a SEZ has been established in Konza to attract enterprises).

As explained in chapter one, Africa is the continent where the population is growing faster and younger. Increasing and young population translate in higher levels of energy and

initiative and is more likely to generate dynamism, an element which enhance the cluster's performances and reputation. Most of the clusters in the Asian cases growth momentum was at least in the very beginning from local or regional markets (Yusuf et al., 2008). Even if with positive perspective in terms of human resources, African countries in many cases do not demonstrate to have a sophisticated demand for goods. This lower innovation incentives as explained by Porter (1990). For example, however, in Nigerian local market this dynamism is not currently present, but the local market was one of the first factors boosting SMEs in the Lagos state to improve their production, as the specific product has received more interest from a demand point of view (i.e. demand for computers).

A common weakness in the clusters is lack of skills, both technical and managerial. Technical skills in fact are more relevant in knowledge intensive sectors such as the Information Technology sector, while managerial and entrepreneurial skills are important in all sectors especially in clusters that are mainly composed by SMEs. In spontaneous clusters such as the Suame Magazine and the OCV, entrepreneurial skills have been developed over time by economic actors, while in Silicon Savannah start-ups lack of high managerial skills. Evidence for example from East Asia showed that successful ICT clusters grew in urban regions that were able to attract high skilled people (Yusuf et al. 2008), that usually have high-quality lifestyle preferences and have plenty of options. Housing and quality infrastructures are therefore essential in this context. Public expenditure for infrastructures is therefore important to create a successful environment for industrial clusters formation and attraction of high skilled people in urban areas.

In addition, lack of capital is a common element in all the clusters. In fact, there is lack of funding, especially from local investors and private sector investors. External funding and governmental funding boost development in the short term but in the long run this can result in instability and dependence from external factors. This situation is more evident in the Silicon Savannah, in the city of Nairobi. However, the capacity to attract venture capital permits to have the availability of risk capital, that is one of the most important resources for a cluster development as noticed in the Asian case studies (Yusuf et al., 2008).

Several are the suggestions for the future development of the clusters. First of all governments need to invest in education in order to form more skilled workers linked to the specific cluster. Efforts of this type has been recognised in the Silicon Savannah. In addition, managerial skills are important to create in these environments, characterised by small and

medium enterprises, more efficient ventures. Coordination is strong in almost every case and must be maintained, because the simple agglomeration of actors is not sufficient to create synergies. A strong change is needed to help small enterprises to overcome capital constraints. Venture capital is an important element in clusters' growth and FDI must be attracted more than they are at the moment in order to enhance the capital availability in some regions. At the same time FDI are useful as they attract skills and experiences from outside the cluster. For example, in the Thai automotive industry mentioned in session 4.2 the capability of the public policies to attract skills and innovations from Japan has been a crucial element that brought the industry to gain the specific knowledge needed. The cluster approach is crucial for regional development, because it leads governments and policy makers to focus on the issues, shortages potential and needs that are common for the majority of the firms composing the cluster and the regional economy. The need to relate to the cluster from a system point of view rather than unrelated singular firms has been emphasized by social and institutional studies, in particular it is evident in the Porter's diamond model of national advantage. Cluster mapping also highlights the need to translate data recorded from firms and regional or national perspective to cluster data. Cluster thinking teaches policymakers and practitioners to build on the unique strengths of their regions rather than try to be like other regions (Ketels, 2017). In the regional analysis practitioners have to focus on the unique environment of the region, composed by geography, culture, natural resources, specific skills and demography. As stated by Porter, every cluster has its own uniqueness that is an important element when competing both in the local and in the global market (Porter, 1990). Cluster thinking also make policy makers to engage in dialogue with cluster members. In fact, to identify the source of competitive advantage and then the specific needs for actors composing the group in the cluster, requires an ongoing dialogue with the firms and other economic actors.

Apart from the more specific clusters policies suggested above, that must be done in order to implement cluster success, important are the policies aimed to spread wealth created by the cluster in the overall region. For example, wine industry in southern Africa have been relevant for the economic development of the country while the Southern African region did not benefit from this positive experience. Lack of external links have been found different from the Italian wine industry examples. In this sense Regional Agreements and the new AfCFTA results to be an important effort to lower trade barriers and to enforce the network of trade within the continent.

Critics and Suggestions for Future Studies

The research has the main objective to understand the situation of the African continent and to examine if the industrial clusters systems can be an effective tool to overcome the issues that are slowing down the economic development of the African countries. Results give general conclusions showing the existence of successful clusters in African countries and demonstrating the possibility to implement this kind of systems. The results are not intended to implement a specific economic activity in any of the explained case studies as this was not the aim of the paper. The paper gives positive results; however, it is difficult to demonstrate that these are generally applicable as the study should be implemented with more case studies. Anyway, industrial clusters have been showed to be successful in different African areas, implying that studies in this sense should continue. In addition, the case studies must be implemented with more recent data and with clusters specific data, as this paper focuses mainly on the structure of clusters and general problems. This consideration is valid looking both within clusters' boundaries and clusters development's effects in regional development. From this last evidence, the new field of cluster mapping appears an important tool for gathering more detailed data about clusters growth and for understanding the real effects of industrial clusters in the regional development.

Conclusions

The analysis of the recent African situation, from an economic, demographic and political point of view, showed positive perspective for the development of the continent: growing young population, enhanced importance of institutions, more democratic governments and positive economic growth perspectives driven by internal and external factors. However, several structural problems underpin the growth perspective and lower economic stability and sustainable growth. These are raw material dependency, random and unpredicted development, low degree of innovation in all sectors, massive use of endogenous capacity and social and political instability. In particular, main structural issues taken into consideration in this paper are lack of innovation and lack of economic diversification. Economic diversification is related to the idea of economic complexity, that has been shown to be source of economic development. Industrial clusters can be an effective tool for African economies to overcome these issues, as they boost innovation and, that in successful clusters self-generates, and spreading its dynamic effect help the economy being more diversified. The analysis of the continent and of the four case studies in particular showed several positive results and many weaknesses. East Africa is the most promising area of the entire continent, as it is the fastest-growing subregion. The region benefits from improvements in economic and social stability, new investments opportunities and incentives from development of new industries. In this context, Kenya demonstrated to have a strong propensity to economic diversification and innovation, trying to build its own “Silicon Valley”, a technology cluster called Silicon Savannah, situated in the area around the capital city, Nairobi. West Africa experienced a growth rate of 3.2 per cent in 2018, but persistent vulnerabilities affect the recent growth impulse in this subregion, especially caused by the predominance of the Nigerian economy, which alone covers the 70 per cent of the regional GDP. In fact, Nigeria always have a fluctuating GDP trend driven by the decreasing and increasing in oil revenues, as Nigerian economy is primarily based in oil prices and exports revenues derived from this kind of goods. However, the country demonstrated to be able to develop its industry in ICT sector, without any help from the governmental authorities. This is the examined case of Otigba Computer hardware Village in Ikeja, Lagos (i.e. the economic capital of the country). The case is completely different from the Kenyan one, as incentives for cluster development especially came from the local demand while the government did not take part in cluster formation. Furthermore, in the same region, Ghana is the most democratic country and its authorities are committed in economic structural changes. In

Ghana was spontaneously born the Suame Magazine, a vehicle cluster in the city of Kumasi. Within this cluster there are the most mature SMEs in the continent. The last cluster analysed is the South African wine cluster. South Africa in 2018 was responsible of the 60 per cent of economic output in the entire Southern African region. Wine industry experience is an example of how the government has been able, with the right policy decisions, to help the economy. The four countries and the four clusters are different from several points of view. Positive factors are R&D capabilities of the clusters, the governments' involvement in cluster formation and a growing population. Critical points have been found in lack of capital availability and lack of managerial. However, even with different characteristics, in all the case studies these cluster showed successful experiences demonstrating the significance of this systems also in developing and under-developed countries. The overall analysis of the case studies demonstrates the need for more institutional efforts in cluster development, especially in spreading the dynamism and successful growth experiences from the specific area of the cluster to the entire region and to other sectors, making the countries enhancing their economic complexity that now results low for global standards. Recent developments with AfCFTA, new efforts toward the formation of strongest democracies and the increasing importance of African institutions in the international environment are positive factors. It is important for industrial clusters to take part in the global value chain and to gain competitiveness in the global market, becoming the real key determinants for African development.

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Appendices

Appendix 1

Regional division of Africa – list of countries. Table created by the author based on www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2019_BOOK-web.pdf; Jan-19-2019

East Africa	North Africa	West Africa	Southern Africa	Central Africa
Burundi	Algeria	Benin	Angola	Cameroon
Comoros	Egypt	Burkina Faso	Botswana	Central African
Democratic Republic of the Congo	Libya	Cabo Verde	Eswatini	Republic
Djibouti	Mauritania	Côte d'Ivoire	Lesotho	Chad
Eritrea	Morocco	Gambia (Islamic Republic of the)	Malawi	Congo
Ethiopia	Sudan	Ghana	Mauritius	Equatorial Guinea
Kenya	Tunisia	Guinea	Mozambique	Gabon
Madagascar		Guinea-Bissau	Namibia	Sao Tome and
Rwanda		Liberia	South Africa	Principe
Somalia		Mali	Zambia	
South Sudan		Niger	Zimbabwe	
Uganda		Nigeria		
United Republic of Tanzania		Senegal		
		Sierra Leone		
		Togo		

Appendix 2

RECs recognised by the African Union, detailed. Table created by the Author based www.au.int/en/organs/recs

Recognised by AU	Year of formation	MEMBERS	PURPOSE
Arab Maghreb Union (UMA)	1989	(5) Algeria, Libya, Mauritania, Morocco, Tunisia	Strengthening ties between the five member states, promoting prosperity, defending national rights, adopting common policies to promote the free movement of people, services, goods and capital within the region.
Common Market for Eastern and Southern Africa (COMESA)	1993	(19) Burundi, Comoros, DR Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, Zimbabwe	Creating a free trade region
Community of Sahel–Saharan States (CEN–SAD)	1998	(29) Benin, Burkina Faso, Cabo Verde, Central African Republic, Chad, Comoros, Côte d'Ivoire,	Promoting the economic, cultural, political and social integration of its Member States

		Djibouti, Egypt, Eritrea, Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Liberia, Libya, Mali, Mauritania, Morocco, Niger, Nigeria, São Tomé and Príncipe, Senegal, Sierra Leone, Somalia, Sudan, Togo, Tunisia	
East African Community (EAC)	1999	(5) Burundi, Kenya, Rwanda, Uganda, UR of Tanzania	Promoting political, economic and trade union. Monetary union as the next step in integration and ultimately become a political federation of East African states.
Economic Community of Central African States (ECCAS)	1983	(10) Angola, Burundi, Cameroon, Central African Republic, Chad, Congo, DR Congo, Equatorial Guinea, Gabon, São Tomé and Príncipe	Promoting Member States' economic and social development and improving people's living conditions
Economic Community of West African States (ECOWAS)	1975	(15) Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo	Promoting economic integration in all fields of economic activity
Intergovernmental Authority on Development (IGAD)	1996	(8) Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda	To represent the interest of East African States; promoting joint development strategies; harmonising Member States' policies; achieving regional food security; initiating sustainable development of natural resources; promoting peace and stability in the sub-region; and mobilising resources for the implementation of programmes within the framework of sub-regional cooperation.
Southern African Development Community (SADC)	1992	(15) Angola, Botswana, DR Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, UR of Tanzania, Zambia, Zimbabwe	Promoting sustainable and equitable economic growth and development; promoting common political values and systems; consolidating democracy, peace, security and stability; achieving complementarity between national and regional strategies; maximising productive employment and use of resources; achieving sustainable use of natural resources and effective protection of the environment; and combating HIV/AIDS and other diseases
In addition, RECs having liaison offices in AU are:			
Eastern Africa Standby Force Coordination Mechanism (EASFOM)			
North African Regional Capability (NARC)			

Appendix 3

Applying the Porter Diamond to a Cluster Strategy: A Broad Template – created by the author based on “Clusters for Competitiveness - A Practical Guide & Policy Implications for Developing Cluster Initiatives” - The World Bank (February 2009)
Link: www.siteresources.worldbank.org/INTRANETTRADE/Resources/cluster_initiative_pub_web_ver.pdf

FACTOR (INPUT) CONDITIONS:

The efficiency, quality and specialization of the inputs available to firms

- *To what extent is the cluster’s competitive advantage depended on basic factor conditions, i.e. climate, cost and productivity of land, location, availability of basic inputs, low cost labor?*
- *To what extent is it based on advanced factor conditions, i.e. human resources such as skilled labor force, physical infrastructure such as efficient transport and logistics, scientific and technological infrastructure, information infrastructure including economic data and corporate disclosure, etc?*

DEMAND CONDITIONS

The presence of demanding and sophisticated local customers

- *How directly is the cluster exposed to the most sophisticated and demanding consumers?*
- *Do local consumers or buyers anticipate trends in global demand?*
- *Are there sections of the local market that provide sophisticated feedback signals?*
- *Do the cluster’s foreign buyers send signals or provide feedback to monitor the pulse of change?*

RELATED AND SUPPORTING INDUSTRIES

- *Who coordinates inter-firm activities in the cluster?*
- *If present, how would you rate the performance of the following institutions? And which among these the institutions are the key reasons behind such performance: industry associations, chambers of commerce, small business associations, export associations, cooperatives, industry boards, standard setting agencies, rating agencies, other institutions?*
- *Are there competitive and high-quality suppliers?*
- *What is the availability and quality of business services?*
- *Are there strong ties with research institutions?*
- *What is the quality of education and training providers?*

CONTEXT FOR FIRM STRATEGY, STRUCTURE AND RIVALRY

- *To what extent are firms investing in new forms of knowledge, innovation and R&D?*
- *To what extent is competition among firms driving the innovation and upgrading process?*
- *To what extent are firms shielded from outside competition?*
- *To what extent do the strategies of firms put ungrading front and centre?*