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:

**ARE AFRICAN LOW-COST OPERATORS ON THE TRAIL OF RYANAIR?
HOW IS THEIR BUSINESS MODEL STRUCTURED WITH REGARDS TO COSTS,
CONNECTIVITY, AND FLEET STRUCTURE?**

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Declaration

I hereby certify that this master's dissertation is my own work and has not been submitted in any previous application for a higher degree. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

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Paris, 1 November 2019,

Christopher Nowak

Abstract

This paper examines the business models of Sub-Saharan African low cost carriers with regards to costs, connectivity and fleet structure in an effort to find out to what extent they exhibit the peculiarities of a classic-case LCC business model within these three dimensions. This is done through a comparison with other airlines from the Southern Hemisphere and with Ryanair as prime example for a 'pure LCC carrier'. In total, nine airlines from four continents have been examined by using an exploratory framework that builds on the Business Model Canvas and the Product and Organisational Analysis.

The central challenges of LCCs in Sub-Saharan Africa remain the strong presence of non-African airlines on the continent, a relatively small middle class, high cross-border tariffs and regulation, rapid and uneven market shifts, a poor safety record, as well as a weak state of the general infrastructure. The sampled African airlines tended to perform similarly to classical LCCs in terms of fleet structure, but exhibited higher costs and a lower degree of connectivity. These peculiarities could indeed give reason to the coining of the term 'African LCC business model'. Sub-Saharan African airlines should pursue a slow and organic expansion strategy that includes improving their seating density, having a lean, but modern distribution system, and choosing routes where the level of regulation is low. They have the potential to fill gaps that other transport providers previously failed to close. Similarly, it is of great importance for international and African academic institutions, think tanks and research organisations alike to generate grand-scale cross-country socio-economic and transportation data. This will give decision makers an overview of structural realities and enable them to begin to seek environmentally friendly on-ground solutions that might not be visible at first.

Key Words: business administration, business models, airlines – fares, commercial aviation – Sub-Saharan Africa, economic development – Sub-Saharan Africa.

Resumo

Esta dissertação avalia os modelos de negócios das companhias aéreas Sul-africanas de baixo custo (low cost carriers - LCC) em relação aos seus custos, conectividade e estrutura da frota na tentativa de descobrir em que medida essas empresas exibem as particularidades dos modelos clássicos de LCC nas três dimensões. Para isso, foi realizada uma comparação com outras companhias aéreas do Hemisfério Sul e também a Ryanair, como exemplo de um modelo puro de LCC. No total, foram examinadas nove companhias aéreas por meio de um framework exploratório composto pelo Business Model Canvas (BMC) e Product and Organisational Analysis (POA).

Os principais desafios das LCCs na África Subsaariana permanecem sendo a forte presença de companhias não-africanas no continente, uma pequena parcela da população de classe média, altas taxas e regulação, mudanças de mercado rápidas e desiguais, baixos registros de segurança e pouca infraestrutura. As empresas africanas selecionadas tentam desempenhar de forma similar as clássicas LCCs em termos de estrutura de frota, mas enfrentam custos maiores e baixos níveis de conectividade. Essas particularidades poderiam auxiliar a cunhar o termo 'African LCC business model'. Companhias aéreas África Subsaariana devem buscar uma estratégia de expansão lenta e orgânica que inclua melhorias na densidade de assentos, criando um modelo lean, mas moderno de sistema de distribuição e escolher rotas em que a regulamentação seja menor. Elas têm o potencial de preencher as falhas que outros provedores de transporte falharam em atender. Por fim, é de grande importância que as instituições internacionais e africanas, think tanks e centros de pesquisa busquem desenvolver mais dados sobre transporte entre os países africanos. Os dados poderiam auxiliar os tomadores de decisão com uma perspectiva geral das realidades estruturais e habilitá-los a buscar soluções ambientalmente responsáveis no local que não são visíveis num à primeira vista.

Palavras chave: administração de empresas, modelos em administração, linhas aéreas – tarifas, aeronautica comercial - Africa Sub-Saara, desenvolvimento econômico - Africa Sub-Saara.

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List of Abbreviations

| | |
|--------------|---|
| AfCFTA | African Continental Free Trade Area |
| ASK | Available seat kilometres |
| BMC | Business Model Canvas |
| CEO | Chief Executive Officer |
| FNCS | Full service network carrier |
| IATA | International Air Transport Association |
| ICAO | International Civil Aviation Organization |
| IMF | International Monetary Fund |
| KPI | Key performance indicator |
| LCC | Low-cost carrier |
| MIT | Massachusetts Institute of Technology |
| POA Analysis | Product and Organisational Analysis |
| PSA | Pacific Southwest Airlines |
| SAATM | Single African Air Transport Market |
| SAM | Single Aviation Market |
| SBMC | Service Business Model Canvas |
| TLBMC | Triple Layer Business Model Canvas |
| UN | United Nations |
| UNDP | United Nations Development Project |
| US | United States |

1 Introduction

This paper looks at the business models of Sub-Saharan African low cost carriers (LCCs) with regards to costs, connectivity and fleet structure in order to find out to what extent they exhibit the peculiarities of a classic-case LCC business model within these three dimensions. This is done through a comparison with both other airlines from the Southern Hemisphere and Ryanair as a prime example for a 'pure LCC carrier'. The following section will explain the paper's research context and the research question, whereas the subsequent section will outline the structure of this dissertation.

1.1 Background and research question

While in the recent past substantial progress could be achieved creating a continental free trade area, Sub-Saharan Africa still lags behind in terms of economic development and integration. This can be attributed partly to poor levels of transnational infrastructure and high costs of transportation. As many on-ground transport solutions require immense government spending, air transportation remains the most feasible high-impact medium-term option for many emerging countries in the region (Bowen, 2019, p. 245-250). Their high population density, steady tourist influx and a fast-growing aviation industry offer in principle a vast potential in this regard (Euromonitor International, 2014; UN, 2017; World Economic Forum, 2017).

Nevertheless, inhibitive factors such as a strong presence of non-African airlines on the continent, a relatively small middle class, high cross-border tariffs and regulation, rapid and uneven market shifts, a poor safety record, as well as a weak state of the general infrastructure pose substantial difficulties for most African carriers to remain profitable (Bowen, 2019, p.17-135; Heinz & O'Connell, 2013, p.73; Hermann & Potgieter, 2016; Martini & Scotti, p.187; Meichsner et al. 2018, p. 183; Njoya et al., 2018, p.161; Rhoades, 2004; Schlumberger & Weisskopf, 2014, p.52; Tuluy, 2016, p.341).

At the same time, the low cost aviation sector has witnessed a steady growth beyond the United States in recent years and carriers such as Ryanair have managed to connect people from different countries at fares that most people can afford. To this date, this proliferation

has yet to reach the African continent at full scale. In 2018, the LCC share of scheduled airline capacity in Sub-Saharan Africa stood at merely 18.2%, considerably below the global average of 31.9% (Bowen, 2019, p.12). Could LCCs turn out to be the solution for the region's transportation woes?

This paper scrutinises the research question 'Are African low-cost operators on the trail of Ryanair? How is their business model structured with regards to costs, connectivity, and fleet structure?'. On the one hand, it is examined to what extent the business models of the sampled African LCCs incorporate typical features of Ryanair's 'no frills' LCC concept. On the other hand, it is discussed whether and to what extent these features are even applicable goals for these airlines. In its analysis, this paper focuses on the three business model dimensions cost structure, connectivity, and fleet structure that have been found to be of special importance for LCCs throughout the region. The examination, also featuring selected LCCs from other regions in the Southern Hemisphere, compares in total the nine airlines Jambojet, Fastjet, Kulula and Mango (all Sub-Saharan Africa), Citilink, Indonesia Air Asia (all Asia/Pacific south of the equator), Azul, GOL (both Latin America) and Ryanair (Europe).

By giving a partly situational assessment of the African LCC sector and discussing the advantages and drawbacks of the LCC business model's applicability to both a general and an African context, this dissertation makes a valuable contribution to the African aviation industry, particularly to decision-makers already operating or planning to operate aircraft in the low-cost segment. Having said that, it goes without saying that the paper is limited in its scope as it exclusively looks at the dimensions costs, connectivity and fleet structure, which are central to LCC business models, but are by no means the only significant dimensions as it is explained at a later point. Moreover, the scope of this study has been rigorously limited by the availability of non-commercial data.

In line with the contribution it seeks to make, this dissertation's research objectives are to first locate where the four sampled Sub-Saharan airlines stand on the LCC dimensions costs, connectivity and fleet structure, especially compared to Ryanair and peers from other regions, and second, to give strategic recommendations regarding the future development of the Sub-Saharan LCC sector in particular and transportation in the region on a broader scale.

1.2 Structure of the paper

The dissertation is divided into five chapters: whereas *Chapter 1* aims to illustrate relevance, research interest and structure, *Chapter 2* briefly introduces main theoretical concepts relevant to the paper namely (1) the background context of the LCC sector in Sub-Saharan Africa, (2) central elements of the business model and (3) the Product and Organisational Analysis. *Chapter 3* outlines the paper's methodology by using the Research Onion tool. At the heart of the dissertation is the examination, presented in *Chapter 4*. Finally, *Chapter 5* connects the findings of the previous section back to the research question from the beginning and provides an outlook on possible future research on the topic. This structure is illustrated below in Figure 1.

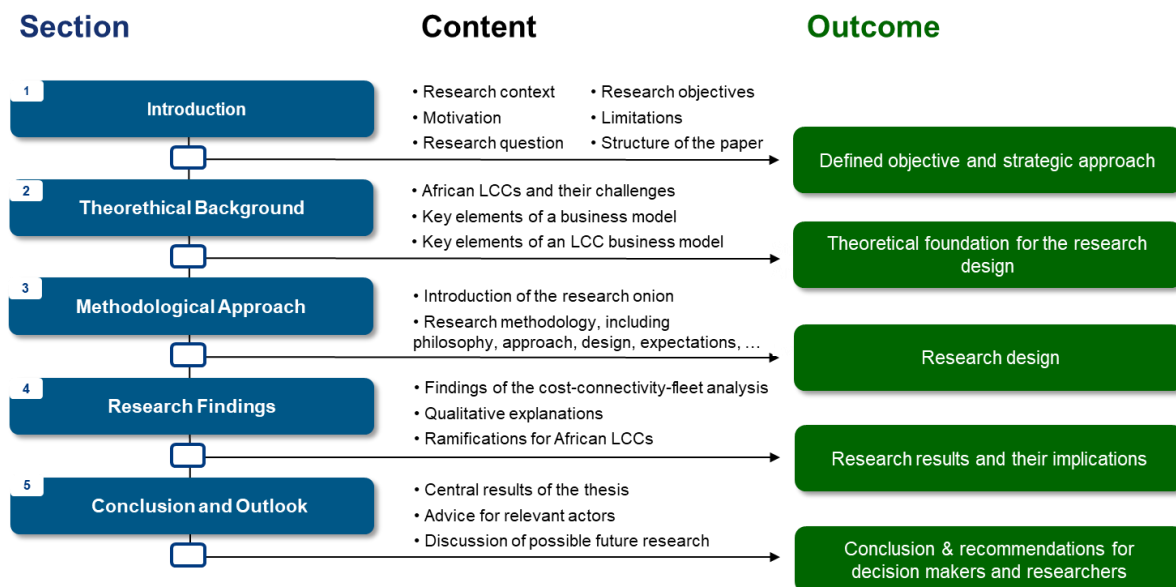


FIGURE 1 | Structure of the paper

2 Theoretical background: key business model elements for the success of African LCCs

In the second chapter of this paper, the theoretical foundation will be created. For this purpose three different sections review, discuss, and develop existing literature to two broad thematic blocks. The first section establishes an overview about low cost aviation in Sub-Saharan Africa, the second section reviews extensively business model theory and assesses to what extent it can be of use for this examination. Next, the third section reviews literature specifically focused on business models of LCCs. Lastly, the fourth section points out the existing research gap on the crossroads of the other three sections.

2.1 LCCs in Sub-Saharan Africa and their challenges

This section will give an overview of the background, state, and future perspectives of the LCC sector in Sub-Saharan Africa. Firstly, it is discussed how a viable low-cost aviation sector potentially could contribute to an improved intraregional transport and economic integration, which in turn could be a driver for economic growth. Secondly, the current state of the aviation industry is presented. Part three subsequently explains the origin and the global diffusion of the LCC business model. Lastly, it is presented to what extent airlines using this model exist in the region and what role they play.

2.1.1 Sub-Saharan Africa: Lack of infrastructure as an inhibitive obstacle for economic integration and growth

On 30 May 2019, the African Union's 'African Continental Free Trade Area' (AfCFTA) entered into force, which is expected to unite 1.3 billion people, craft a USD 3.4tn economic bloc, and launch the commencement of a new era of intercontinental economic integration and development across Africa (African Union, 2019; Deutsche Welle, 2019).

A new era of intercontinental economic integration and development across Africa¹ – as of the launch of the AfCFTA this still remains an aspiration rather than a reality, especially for

¹ Unless explicitly stated otherwise, the words 'Africa' and 'Sub-Saharan Africa' are used interchangeably in the following pages, with the former word acquiring the meaning of the latter.

Sub-Saharan Africa. In 2018, the United Nations assigned this region a Human Development Index value of 0.537 – making it the only global region falling into the category of ‘low human development’ (UNDP, 2018, p.25). More specifically, the region lags behind in terms of economic development. Despite a share of the world population of by now 14.2%, only 3.18% of the global GDP sits in Sub-Saharan Africa (World Bank, 2019; IMF, 2019). At the same time, its portion of global exports is just 1.7%, yet the export of raw materials accounts for most of these 1.7% (Schmieg, 2016, p.1; Itumo, 2017, p.17).

This lack of economic clout and integration in world trade can at least partially be attributed to a dismal economic integration amongst countries of the region. European powers developed extraction economies with the infrastructure designed to export goods to the imperial powers, leaving a lasting negative impact on intraregional integration in post-colonial times. The strong economic ties between former European imperial powers and their African colonies had a negative impact on intraregional integration, as the massive export of predominantly primary goods out of the continent brought African countries short-term revenues, but no long term growth as well as incentives to deregulate their tariff and trade laws, especially with respect to neighbouring countries (Ismail, 2017, p.6-9).

Another central, widely acknowledged contributing factor for Africa’s stagnant economic integration is the insufficient state of infrastructure in general and transportation infrastructure in particular in many parts of the region (Tuluy, 2016, p.341). Having some of the lowest infrastructure investment levels in the world, the World Bank estimates that the African continent has to spend USD 93bn per year in order to upgrade its current infrastructure (Aker & Mbiti, 2010, p.207; Mayaki, 2017, p.3). Particularly transport costs across the continent are the highest in the world, and ground transportation as well as air transportation are partly improving, yet remain underdeveloped and dispersed (Tuluy, 2016, p.341; Bowen, 2019, p.119-120).

Therefore, in order to make possible the AfCFTA’s enticing promise, significantly improving Sub-Saharan Africa’s porous passenger transportation network will be, amongst others, one indispensable condition. Based on the assessment of Bowen (2019, p. 245-250) that whereas ground transportation systems such as high-speed rail networks are the ideal end-solution for linking great metropolises in countries with sufficient availability of large capital investments air transportation remains the most feasible high-impact medium-term option for many

emerging countries, it is safe to say that the development of improved air transportation networks across the region will be a central component to the fulfilment of that condition.

2.1.2 The aviation Industry in Sub-Saharan Africa

Sub-Saharan Africa, a region with a population of more than one billion people, including a significant share of them in remote rural communities, offers in principle a vast potential for commercial air transportation (United Nations, 2017). According to the International Air Transport Association (2018), in Africa the compound annual growth in passengers is going to average 4.6% in the next two decades. Moreover, 30m tourists visiting Sub-Saharan Africa in 2015 (World Economic Forum, 2017) and the continent's industry being amongst the fastest growing globally (Euromonitor International, 2014) highlight Africa's potential of transforming into a fast-growing transportation market. As the previous section has shown, this transformation is not just a potential possibility, but a necessity.

Nonetheless, a number of inhibitive factors threaten to prevent this transformation. Firstly, around 80% of traffic in Africa is flown by non-African airlines, in countries such as Nigeria this figure stands at more than 95% (Heinz & O'Connell, 2013, p. 73). This is a mirror image of the above-mentioned connection in terms of trade – colonial ties and dependencies have proven their tendency to remain in place, as the past has shown (Njoya et al., 2018, p.161; Hermann & Potgieter, 2016). Secondly, the still small African middle class, with the exception of countries such as South Africa, is growing rather slowly (Bowen, 2019, p.135; Schlumberger & Weisskopf, 2014, p. 52). This poses a problem as airlines in general require potential customers to have a certain amount of disposable income, a precondition valid for both full service network carriers (FSNCs) and LCCs alike (Bowen, 2019, p.17,46-47).

Thirdly, largely externally imposed costs such as tariffs and taxes make low cost operations extremely difficult (Meichsner et al. 2018, p. 183). One form of this protectionism is the repatriation of airline's profits from foreign operations where according to the IATA with Angola, Sudan and Zimbabwe three Sub-Saharan African countries are the worst offenders globally (Bowen, 2019, p.134). However, the recent establishment of the Single African Air

Transport Market (SAATM)² possesses the potential to improve this situation significantly, if ultimately signed by all countries in the region (Bowen, 2019, p.127).

Fourthly, due to the commodity exporting nature of the region's economies, rapid and uneven market shifts are common. This poses a serious threat to airlines as they are often extremely sensitive to their profit margins, especially during the years of formation (Bowen, 2019, p.134-135). Fifthly, whereas many airlines improved significantly in this regard, Sub-Saharan Africa still is considered to have a relatively poor air transport safety record (Martini & Scotti, p.187; Rhoades, 2004, Bowen, 2019, p.135; Hermann & Potgieter, 2016). Lastly, in a chicken-or-egg causality dilemma, the inadequate infrastructure which can be partly blamed on the poor development of the African aviation industry in turn curbs the latter, too (Bowen, 2019, p.135).

Therefore, except for few noteworthy exceptions such as Ethiopian Airlines, most African carriers have had difficulties to remain profitable (Meichsner et al., 2018, p. 182), resulting in a considerable fluctuation of airlines appearing and disappearing over the years (Mhlanga, 2017, p.2; Amankwah-Amoah, 2018). Generally, few airports have both adequate connections and capacity to develop thriving regional passenger operations (Tuluy, 2016, p.342). Nevertheless, small, but significant success stories give rise to hope, such as the one of Bole International Airport in Addis Ababa, which in 2018 overtook Dubai as the leading transfer hub for long-haul flights to sub-Saharan Africa and subsequently tripled its size through an expansion (Dahir, 2019), or stories of essential, formerly non-operational direct routes being put to life (Tuluy, 2016, p.342³).

That the general trend, especially with regards to intercontinental traffic in Africa, is positive is indicated by figures cited by Martini and Scotti⁴ (2017, p.189), whereby available seats on intra-African flights rose by 86% between 1997 and 2003. What appears particularly

² In 2018, the following 23 African states signed on to the SAATM: Benin, Botswana, Burkina Faso, Cabo Verde, Congo, Côte d'Ivoire, Egypt, Eswatini, Ethiopia, Gabon, Ghana, Guinea, Kenya, Liberia, Mali, Mozambique, Niger, Nigeria, Rwanda, Sierra Leone, South Africa, Togo, and Zimbabwe (Bowen, 2019, p.127). As of July 2019, another five countries followed subsequently: Cameroon, Central African Republic, Chad, Gambia, and Lesotho. Combined, all 28 countries represent more than 80% of the existing aviation market in Africa (IATA, 2019).

³ As of July 2019, Tuluy's claim from 2016, stating that the Dakar-Lagos connection would lack a single nonstop flight, did not prove to hold valid anymore (research on Kayak.com for a return flight for the dates 11 October - 18 October 2019).

⁴ All of the mentioned data refers to Africa as a continent, including Northern Africa.

encouraging is that the routes between different African sub regions (e.g. Southern Africa – West Africa) have witnessed the steepest growth. In line with that, the Centre for Aviation (2018) expects a number of new competitors to enter markets across the continent, of which many are claiming to offer a Low-Cost Carrier (LCC) model to challenge smaller and often inefficient national carriers. Before continuing with the analysis of the African case, it is essential to understand this model. Therefore, it might be useful to take a short excursion to explain its background and diffusion – this is what the following subsection seeks to achieve.

2.1.3 The diffusion of LCCs

The global rise of low-cost carriers (LCCs) has its starting point in the deregulation of the domestic aviation market of the United States in 1978 (Azadian & Vasigh, 2019, p.19; Bowen, 2019, p.36-42, Gross et al., 2013, p.4). But what does the LCC business model entail? Bowen (2019, p.5) defines an LCC as “an airline that operates in a way that minimises costs to the benefit of passengers”. For Azadian & Vasigh (2019, p.19) “the LCC business model revolves around cutting costs and providing no-frills service. The LCC[s] cater their product toward more price-sensitive travellers who are typically willing to trade off services for low prices.”

But in what way are the costs cut to the customer’s benefit? Bowen (2019, p.6-9) sees mainly five patterns in which LCCs take on full service network carriers (FSNCs), namely lower costs devoted to (1) labour, (2) aircraft and fuel, (3) infrastructure, (4) product and distribution, (5) as well as a higher seating density. As the last aspect implies a lowering of the per passenger cost, all of these five patterns are related to cost, making it virtually the focal point of the LCC business model.

Measures taken to cut these costs usually work towards efficiency gains and include, amongst others, extended use of technology (automation on the ground; booking systems), standardisation (usually one aircraft type; one seating class), increasing the time the plane is in the air (lower turn time; multi-hub system), making concessions in terms of client comfort (fewer amenities; use of secondary airports), as well as, last but not least, paying staff lower wages (Azadian & Vasigh, 2019, p.21; Bowen, 2019, p.6-9). However, apart from questions of efficiency, conveying a positive corporate spirit has traditionally also been central to LCCs, especially to pioneers such as Loftleidir, PSA and Southwest (Inkpen, 2013, p.6-7; Bowen, 2019, p.55-59).

Even though many commentators of the LCC evolution today attribute the pioneer role to Southwest, it could be awarded to three different historical examples: the Icelandic airline *Loftleidir* in the 1960s and the California-based *Pacific Southwest Airlines (PSA)*⁵ as well as the Texas-based *Southwest Airlines* in the 1970s (Inkpen, 2013; Bowen, 2019, p.53-54). Through a legislative loophole and via its primary hub Reykjavík and its secondary hub Luxembourg, Loftleidir operated transatlantic long-haul flights at considerable lower fares than all its competitors in the by-then still tightly regulated international passenger aviation market (Bowen, 2019, p.55-57). Both PSA and Southwest emerged at a similar time as state airlines, whereas it is noteworthy that the latter openly imitated the business model of the former beyond just its name. Initially both airlines first gained a strong market share in their respective states. After deregulation in 1978, they were allowed to expand nationwide and, whereas PSA had its last flight in 1988⁶, Southwest became the world's third largest passenger airline⁷ (Inkpen, 2013, p.1-4; Bowen 2019, p.58-66, 54),

Both PSA and Southwest operated, as most LCCs today with few notable exceptions such as *Norwegian Airlines*, short-haul operations and had set the standard for the LCC sector with many of the abovementioned practices (Bowen, 2019, Inkpen, 2013). Regarding the few long-haul operators that try to remain profitable, a number of studies have been published, with mixed results as to whether the LCC model can be sustainably successful for long-haul operators. While LCCs' cost advantage has been proven, it is disputed whether this advantage is large enough to offset lower revenues (Soyk et al., 2017, p.231).

With American president Jimmy Carter signing the International Air Transportation Competition Act in 1979, the creation of the Single Aviation Market (SAM) in Europe in 1992, and the proliferation of an increased number of 'Open Skies Agreements', pushed by the United States in the 1990s paved the way for an increasing deregulation of international markets (Bowen, 2019, p.43). This made possible the emergence of LCCs outside the US. Companies such as *AirAsia*, *Easyjet* and *Ryanair* managed to apply Southwest's model to international, yet intercontinental markets, spanning across multiple countries (Inkpen, 2013, p.7; Bowen, 2019, p.67). Albeit, Ryanair stretched the 'no-frills model' to its limits and today

⁵ For reasons of clarity and simplicity, this paper refers to the California-based historical airline as *PSA* and the still operational Texas-based airline as *Southwest*.

⁶ It signed a merger agreement with USAir in 1986 (Bowen, 2019, p.62).

⁷ According to the number of passengers and as of 2016 (Bowen, 2019, p.54).

is widely known to be one of the LCCs with the lowest cost structure globally (Mason & Morrison, 2008, p.84; Vladimir & Roni, 2018, p.243). Yet, with its questionable stance on labour rights and environmentalism, the airline and its CEO Michael O’Leary also became infamous (O’Sullivan & Gunnigle, 2009, p.252; Bowen, 2019, p.250).

According to the ICAO (2017), in 2017 there were about 125 LCCs across the globe, and there had been another 130 going bankrupt before that. One year later had been the first year in history where more people boarded a plane with both departure and destination airport in emerging markets than in developed economies (Bowen, 2019, p.3). This trend is also mirrored in the LCC segment where, as of March 2018, already 6 of the 15 biggest operators came from emerging markets (Bowen, 2019, p.14). In countries within South and Southeast Asia, every second plane taking off is operated by an LCC (Bowen, 2019, p.12). Nonetheless, as the subsequent section describes, the growth of the LCC segment advances slower in Sub-Saharan Africa than in other regions of the world.

2.1.4 The current state of low-cost aviation in Sub-Saharan Africa

Inherent to the research question ‘Are African low-cost operators on the trail of Ryanair?’ is the assumption that the LCC model could potentially give millions of people access to other countries within the continent. However, as of today, the problems faced by the African FSNCs have also significantly troubled the development of African LCCs (Martini & Scotti, 2016, p.196). As a consequence, no comprehensive intraregional LCC network has been able to develop thus far (Hermann & Potgieter, 2016). In April 2018, the LCC share of scheduled airline capacity in Sub-Saharan Africa stood at 18.2%, considerably below the global average of 31.9% (Bowen, 2019, p.12).

Whereas in North Africa LCCs have been able to pose considerable international competition towards FSNCs, this has not been the case for Sub-Saharan Africa yet (Njoya et al., 2018, p.166). With the exception of the development of nationwide domestic LCC markets, the vast majority of routes within and to and from Sub-Saharan Africa (more than 90%) had no LCC presence at all in 2018 (Martini & Scotti, 2016, p.196; Bowen, 2019, p.122). Figure 2 and 3 highlight the distribution of low cost carriers in the region, where currently there are eight airlines active. As Figure 2 shows, all of these airlines have their corporate headquarters in only three countries: Kenya, Nigeria, and South Africa. However, Fastjet is not particularly a

South African airline, its first operations were carried out in Tanzania, while it was registered in London. Today, it is headquartered in Johannesburg and operates no longer in Tanzania, but Mozambique, South Africa, and Zimbabwe (Bowen, 2019, p.133-138; Fastjet, 2019; Hill, 2016).

Figure 3 highlights the limited number of airports served by these airlines. It becomes evident that the airlines from those three countries sometimes also have destinations in neighbouring states, but an intraregional, comprehensive network as in Europe still remains far from reality for now. Rather than that there are three more or less isolated systems that are not really connected, Many states, especially in West and Central Africa, are completely excluded from LCC operations. In other countries where LCCs do operate, major metropolitan areas are left out (Kampala, Uganda; Kumasi, Ghana; Kano, Nigeria; all Tanzanian cities besides holiday destination Zanzibar),

| AIRLINE | COUNTRY | FOUNDED | DESTINATIONS | COUNTRIES |
|-----------------------------|---------------------------|---------|--------------|-----------|
| Fly540 | Kenya | 2013 | 9 | 3 |
| Jambojet⁸ | Kenya | 2013 | 7 | 2 |
| Air Peace | Nigeria | 2013 | 9 | 3 |
| Dana Air | Nigeria | 2008 | 5 | 1 |
| Fastjet | South Africa ⁹ | 2012 | 8 | 3 |
| Kulula | South Africa | 2001 | 7 | 1 |
| Mango | South Africa | 2006 | 8 | 2 |
| Safair | South Africa | 2014 | 7 | 1 |

FIGURE 2 | Overview about operational LCCs in Sub-Saharan Africa in July 2019 (based on Bowen, 2019, p.121; updates based on own research on respective company websites)

⁸ As Bowen (2019, p.2) notes, due to unknown reasons, the ICAO list missed some airlines that are widely considered as LCCs. In Sub-Saharan Africa this applied to Dana Air (Nigeria) and Jambojet (Kenya, subsidiary of Kenyan Airways). For the latter sufficient data is available online to include it in the sample.

⁹ Seat of holding company. The initial Tanzanian operations had been ceased as of July 2019.

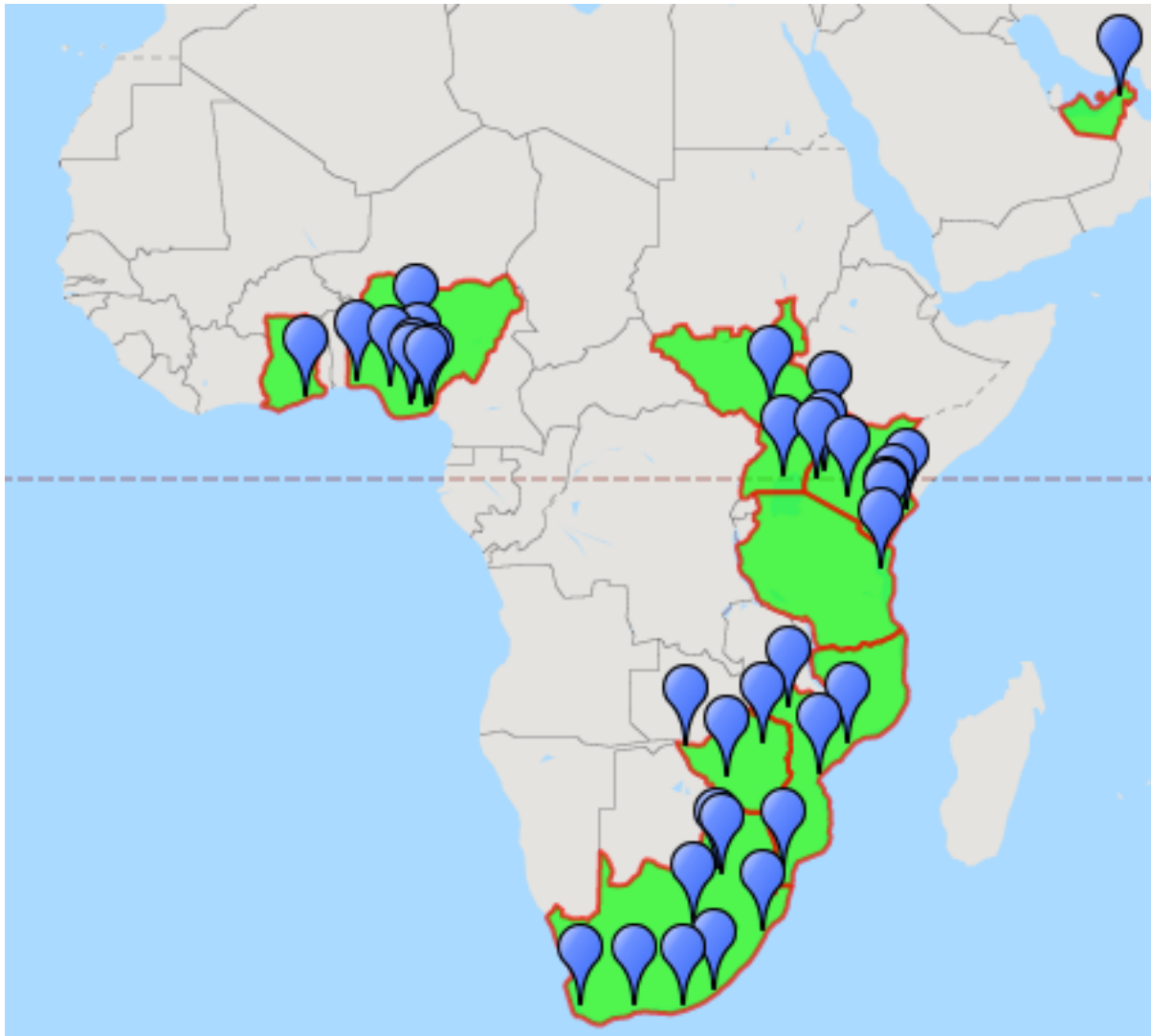


FIGURE 3 | Location of operational LCCs in Sub-Saharan Africa in July 2019¹⁰ (based on Bowen, 2019, p.121 as well as own research on respective company websites)

The Centre for Aviation (2018) expects a number of new competitors to enter markets across the region, of which many are claiming to offer a Low-Cost Carrier (LCC) model to challenge smaller and often inefficient national carriers. Especially the often poor state of the ground transport network, together with the rise of a middle class, should offer sufficient demand in many countries. Moreover, multilateral liberalization of the industry, most notably the recent establishment of the single African Air Transport Market (SAATM), should pave the way further for African LCCs (Bowen, 2019, p. 119).

¹⁰ The only destination of Sub-Saharan LCCs outside the region is Sharjah International Airport in the United Arab Emirates, served by Air Peace since July 2019.

Despite the expected growth in coming years, the majority of challenges that prevailed in the past will exist in the coming years as well. Largely externally imposed costs such as tariffs and taxes make low cost operations extremely difficult. Moreover, according to Meichsner et al. (2018) there are a number of other obstacles for African operators:

[T]he African environment is characterised by relatively weak demand, extensive government regulation, inadequate infrastructure, low aircraft utilisation, safety and security challenges, low internet penetration, low load factors, skill shortages, high airport charges, overstaffing, strong travel agencies that take high commissions together with high fuel prices, fees, taxes and corruption. (p.183)

Whilst new entrants try to establish an LCC segment in the African air transportation market, the question remains as to whether this could be a noble pan, but remain an impossible mission. These LCC carriers will have to walk the tightrope of developing a margin- and profit-focused business model in a traditionally unprofitable environment – margins of the conventional African airlines are low and the degree of regulation is a heavy burden, especially for companies operating in many different countries (Heinz & O’Connell, 2013, p. 77). This paper aims to shed light on the business models of Sub-Saharan African LCCs in order to find out to what extent they exhibit patterns of a classic-case LCC business model. This is done through a comparison with both other airlines from the Southern Hemisphere and Ryanair as a prime example for a ‘pure LCC carrier’. Therefore, the goal of the study is to find out whether the problem of African LCCs lies only in the above-mentioned external factors or whether their business models prevent them from succeeding, too.

2.2 Key elements of a business model

The first step to establishing part two of the theoretical foundation of this paper is to get a clear understanding what a business model entails. After this process of comparing existing business model literature and defining the term for this paper, the objective is to forge a suitable basis for a business model analysis. Therefore, after evaluating different literature streams and theoretical models, the Business Model Canvas as the most practical and comprehensive model is presented, which essentially contributes to the paper’s methodology and is directly linked to the third theoretical section, combining the other two. Business model research is an area that, while having an increasing prominence in recent years, is widely

contested. After giving a brief introduction to business, this section aims at giving a global overview about the most featured aspects of this discussion, including the interdisciplinary nature of business model research and the three most prevalent streams of business model definition.

2.2.1 Business

Before discussing the term ‘business model’, it should be established what a ‘business’ is. According to Longman (2005), it can be (1) “the activity of making money by producing or buying and selling goods, or providing services”, (2) “an organization such as a company, shop, or factory that produces or sells goods or provides a service”, or (3) “the amount of work a company does or the amount of money it makes”. Whereas all three of these definitions are included in a business model in different ways, both the first and the third definition indicate why a business model is not exclusively about companies and reaches beyond being merely a ‘company model’ or ‘organisational model’.

A business should not be confused with a company. The distinction between business and company is made by Onians (1995) like this:

Companies come and go as owners, directors and – too frequently – creditors dictate. Businesses, so long as they continue to provide a legitimate function, continue to exist indefinitely by changing their ownership, share structure, name and strategic positioning as survival demands. (p.20)

In essence, the central observation made by this quote is that business is a process of human (inter)action that can adopt a variety of different shapes and forms, one of them being a company.

2.2.2 Origins of the business model concept

Attempts to define the term business model date back beyond the recent past. While Chesbrough and Rosenbloom (2002, p.530) go as far as tracing its conceptual roots back to the 1960s, a more widely accepted (Magretta, 2002; Felt, 2014; Joyce & Paquin, 2016; Ovens, 2017) first point of origin for business model research is in the early 1990s, when Drucker (1994, p. 197) formulated a number of distinct criteria for what he called “a valid theory of the business”. While Drucker’s work tended towards strategy-related questions of markets

(Ovans, 2017), Drucker highlighted that his inferences were “about what a company gets paid for” (Drucker, 1994, p. 192), which until today is still a central aspect of business model theory as will be explained below. Moreover, Drucker then made a statement about the longevity of business models that would be echoed by many of his peers years later: “Some theories of the business are so powerful that they last for a long time. But [...], today they rarely last for very long at all” (Drucker, 1994, p. 198).² Key elements of a business model were according to Drucker (1) a firm’s environment, (2) its mission, (3) and the key competencies required to attain this mission. Since then, his analysis has been interpreted by many authors (Birkinshaw & Goddard, 2009, p. 82).

Since these early beginnings, business model research has been the object of a seemingly ever-increasing amount of research and discussion; “an explosion in the number of articles published” (Zott et al., 2011, p.1020) about the topic has been taking place, in both scientific research and management practice (Wirtz et al., 2016, p.2). The steep increase of this prominence was well-illustrated by Massa, Tucci and Afua (2017, p.75), showing that the number of related papers has risen from around 100 per year in 2002 to more than a 1000 in 2015.

Wirtz, Göttel and Daiser explain this rising importance with increasing competitiveness of corporate environments in recent years: “If companies want to remain successful in globalized and increasingly digitalized markets, they have to be able to continually adjust to varying market conditions and to cope with a highly dynamic and competitive business environment” (Wirtz et al., 2016, p.2). Osterwalder (2004, p.23) notes:

[I]t can be said that the expression was inflated through journalists, business people and academics that used it in relationship with e commerce, start-up companies and high tech companies. It seems that the executives, reporters, and analysts who used the term “business model” never really had a clear idea of what it meant.

Looking at the evolution of business model research, it can be said that while this might be true, nevertheless a lot of scientific research has been carried out – including the evolution of different schools of thought and a variety of different models and tools for analysis. This chapter gives an overview about these developments.

2.2.3 Business model and strategy

Before examining the more recent discussion about the definition and use of the term it is useful to look at the relationship between business model and strategy theory, which appears to be nearly as contested as the definition of a business model itself. In this matter, there are three different streams of thought, which each give the two terms a higher or lower degree of proximity towards each other (Seddon et al., 2004, 428). Firstly, there are people that use strategy and business models nearly interchangeably, not knowingly aware of any differences between the two (Magretta, 2002, p.86-89). Secondly, a number of authors views business models mostly as strategy thought presented in a new look. Porter (2001, p. 73) is one of them:

The definition of a business model is murky at best. Most often, it seems to refer to a loose conception of how a company does business and generates revenue. Yet simply having a business model is an exceedingly low bar to set for a company. Generating revenue is a far cry from creating economic value, and no business model can be evaluated independently of industry structure.

Many authors of this second group highlight that competition is a very central aspect of the business model (Massa et al., 2017, p.89). One example is the work of Casadesus-Masanell and Ricart (2010, p. 195), acknowledging that there is a difference between strategy and business by viewing the business model as “a reflection of the firm’s realised strategy”.

Thirdly, another group of authors highlight that the business model gives mostly information about the business itself and how it generates money, whereas for strategy authors finding a uniquely fitting niche despite competition in- and outside a specific market stands at the core (Magretta, 2002, p. 86-89). Moreover, Chesbrough and Rosenbloom (2002, 529) highlight that business models turn an organisation’s latent value into economic value that features in the strategy school of thought.

Lastly, similar to the third group of authors acknowledging the difference between business models, and strategy, some authors view the business model, strategy, and the real firm as conceptualisations of the same idea, just having different levels of “abstraction”, with the business model being the most abstract concept of the three (Seddon et al., 2004, p. 429), or to put it in the words of Osterwalder et al. (2010, p.13): “[t]he business model is like a blueprint for a strategy to be implemented”. For this dissertation, the third interpretation of the relationship between business model and strategy is used as it draws a clear distinction

between the (internal) business and the (external) market. The models used for this paper's methodology, Business Model Canvas and POA analysis, highlight that.

2.2.4 The contested business model definition

Despite the proliferation in available literature, business model theory has always been a source of contention for diverse opinions and no definition has been able to take hold as universally accepted (Massa et al., 2017; Teece, 2017; Teece & Linden, 2017; Wirtz et al., 2017; Yunus et al., 2010; Zott et al., 2011). This lack of a clear definition can be partly attributed to the interdisciplinary nature of the object of study – business models are neither 'at home' in the social sciences nor in business studies (Bereznoi, 2015, p.16; Teece, 2010, p. 176). As business models matter for a wide range of actors from different fields and industries such as technology and innovation management, information systems, strategy and management, environmental sustainability, and social entrepreneurship, it is looked at from different angles with naturally different expectations towards it (Osterwalder et al., 2005, p.2; Massa et al., 2017, p.74).

Only in rare cases, the concept is discussed taking into consideration the multitude of many of these different dimensions (Joyce & Pacquin, 2016, p.1482-83; Massa et al., 2017, p. 73-74; Yunus et al., 2010). Another explanation for this lack of agreement is that the definition of the business model is strongly influenced by the respective interpretation of what a business model is, what its functions are, and which actors are at the centre of action. Based on this 'interpretation' of a business model, also the components of the model and the terminology describing it vary substantially (Massa et al., 2017, p.88).

So how can one make sense of it all? Based on the above-mentioned obstacles, the subsequent sections cluster the different definitions into three distinctive 'camps' of approaches. Essential foundation for this clustering is the approach of Massa et al. (2017), who examined 216 articles published between 1995 and 2016 and categorised 43 of them after conducting an exhaustive in-depth analysis looking at units of analysis, keywords and formulations of every component of their sample. Eventually, their examination gave rise to three main interpretations of business models: "(1) business models as *attributes of real*

*firms*¹¹ having a direct real impact on business operations, (2) business models as *cognitive/linguistic schema*, and (3) business models as *formal* conceptual representations/descriptions of how an organisation functions” (Massa et al., 2017, p. 97).

The definition review of this paper maintains most elements of these three interpretations, but simplified their description. To give a better overview and provide a higher degree of simplicity, it was decided to assign the three definitions adjective labels as names rather than elaborative sentences. While on the following pages the three clusters are discussed in detail, this paper labels them (1) ‘observational’, (2) ‘constructivist’ and (3) ‘normative’ interpretations. Finally, for reasons elaborated below, this paper uses the normative interpretation of business models as theoretical basis.

2.2.4.1 ‘Observational’ interpretations

Unlike the two others, the first cluster captures those business model interpretations following a descriptive-empirical approach (Massa et al., 2017, p.76). Whereas Massa et al. (2017, p.77) call this “Interpreting Business Models as Attributes of Real Firms”, in this paper they are labelled as observational interpretations, indicating their empirical (vs. conceptional) tendency. The observational interpretation is well-described by McGrath (2010, p.247): “The business model concept offers strategists a fresh way to consider their options in uncertain, fast-moving and unpredictable environments. [... U]nlike conventional strategies that emphasize analysis, strategies that aim to discover and exploit new models must engage in significant experimentation and learning[,] a ‘discovery driven,’ rather than analytical approach.”

As McGrath’s quote highlights, most observational business model interpretations put their focus on existing ‘success story’ businesses rather than seeking to create universally applicable frameworks or rules for all businesses. The idea is often that there is no ‘schema x’ guaranteeing success, but that a successful business model is a unique creation, the result of many beneficial real life factors coinciding and joining together. Therefore, observationalists often use terms coined by the corporate world such as ‘no-frills’, ‘freemium’ or ‘pay-as-you-go’ in order to describe business models and their components (Casadesus-Masanell & Zhu,

¹¹ Emphasis added by the original authors.

2012, p.465; Pujol, 2010; Massa et al., 2017, p.78). Sometimes, this tendency goes as far as that names of particular companies and their practices become synonyms for described phenomena; authors refer to a “Facebook business model” (Krombholz et al., 2012, p.175), warn companies of the dangers of getting “netflixed” (Kaplan, 2012, p.3-5), or create an entire business model/marketing stream of thought called “uberisation” (Sharam & Bryant, 2017, p.202-204).

Due to the rather descriptive nature of the observatory cluster, it is virtually impossible to find a business model definition that is detailed, universal and wholesome at the same time. This problematic has been recognised by observationalist authors such as Johnson (2010, p.3) “The biggest challenge is to move beyond a description beyond the various things successful companies do to some kind of theory about when those moves will work and when they won’t.” An example for a typical subject of analysis for scholars of this business model interpretation are firms that compete with two separate business models at the same time as a response to the emergence of a disruptive business model – for example an FSNC with an LCC subsidiary (Ko, 2019, 92; Markides, 2013, p.39).

2.2.4.2 ‘Constructivist’ interpretations

The constructivist interpretation of business models revolves around the idea that corporate decision-makers take action based on “images of real systems” in their minds (Massa et al., 2017, p.82). Therefore, the biggest differentiation towards the first cluster is that the notion of ‘reality’ is taken with a grain of salt by constructivists: they acknowledge the uniqueness and diversity of business models in a similar way observationalists do (and are not in favour of ‘one-fits-all models’ as normative interpretations), but however put the individual, the collective, or the discourse itself at the centre of their analysis, rather than ‘Company X/Y/Z’ (Massa et al., 2017, p.81). Despite not being prevalent in business theory, the term ‘constructivism’ seems to capture this way of interpreting business models quite accurately as it “describes knowledge not as truths to be transmitted or discovered, but as emergent, developmental, non-objective, viable constructed explanations by humans engaged in meaning-making in cultural and social communities of discourse” (Fosnot, 2005, p.ix).

A well-known business model definition from this stream of thought (Massa et al., 2017, p.81) is the one of Chesbrough and Rosenbloom (2002, p. 529), stating that

[a] successful business model creates a heuristic logic that connects technical potential with the realisation of economic value. The business model unlocks latent value from a technology, but its logic constrains the subsequent search for new, alternative models for other technologies later on—an implicit cognitive dimension overlooked in most discourse on the topic.

Thus, the two authors perceive business models both as a converter and as a lever: on the one hand, value that exists on a technological level can be converted into economic value. On the other hand, during this transformational process, existing potential can be enhanced and materialised. Nevertheless, through this thriving of one model, one technology, others are somewhat curbed in their growth.

While other constructivist accounts such as Baden-Fuller and Morgan (2010, p.156; “business models as models”), Aspara et al. (2013, p.480; “the business unit manager’s perceived logic of how the unit in question functions and creates value”) and Magretta (2002; “stories that explain how enterprises work”) have a divergent definition of what a business model is, the most unifying feature of all these theories is their unit of analysis. Unlike observational and normative business model interpretations, which both put more or less the firm itself at the centre of their theories (Massa et al., p.78/87), constructivists’ unit of analysis is the individual – it can be user/client as for Chesbrough and Rosenbloom, or a firm’s manager as the case with Aspara et al.’s and Magretta’s definitions.

Remarkably, having different units of analysis does not prevent business model definitions from different interpretative clusters from having elements in common with each other. This becomes evident when comparing the “functions of a business model” given in the abovementioned paper of Chesbrough and Rosenbloom (2002, p.533-534) to elements of normative accounts, which are discussed in the next subsection. Chesbrough and Rosenbloom state that a business model should, amongst other functions, “articulate the *value proposition*¹²”, “define” an internal “*value chain*” and an external “*value network*”, and “estimate the *cost structure* and *profit potential*”.

¹² This and all other emphases in this paragraph were added by the original authors.

2.2.4.3 'Normative' interpretations

Normative interpretations are abstract in a sense that they focus on providing a model that can be used as a blueprint for a variety of firms. While they are similarly focused on simplicity as the 'observational' interpretations of business models, they usually contain a higher degree of abstraction due to their conceptual (vs. empirical) tendency. The main difference to constructivist interpretations on the other hand is the unit of analysis, which is generally the firm itself for normative authors. Carrying out a firm-focused business model analysis, for this paper the normative interpretation seemed to be better suited than the former two and was therefore chosen to be a central part of the theoretical foundation.

One central element of normative business model interpretations is *value creation and delivery*. Teece (2010, p.173) notes "A business model articulates the logic and provides data and other evidence that demonstrates how a business creates and delivers value to customers." Similarly, for Giesen et al. (2010, p.18) amongst the key elements of a business model is "[w]hat value is delivered to customers¹³". Yunus et al. (2010, p.312) call this the "value proposition, which is the answer to the question: 'Who are our customers and what do we offer to them what they value?'"

Secondly, the *value structure* is highlighted by many authors, too. What Teece and Linden (2017, p.2) call "value architecture", Giesen et al. (2010, p.18) describe as and "[h]ow the value is delivered¹⁴". According to the latter this includes "critical internal resources and processes as well as external partnerships", a point of view similar to Yusuph et al. (2010, p.312), stating that "the company's own value chain" and "its value network with its suppliers and partners" comprise the "value constellation".

Thirdly, from a normatist' stance, *value capture / revenue creation* are central to a business model as well. For Teece (2010, p.173), the business model "outlines the architecture of revenues, costs, and profits associated with the business enterprise delivering that value". The "manner by which the enterprise [...] entices customers to pay for value, and converts those payments to profits" is what he calls "capture mechanisms" (p.172). Similarly, to Giesen et al. (2010, p.18) "the pricing model and forms of monetisation", "[h]ow revenue is

¹³ To improve readability, an emphasis added by the original authors has been removed.

¹⁴ To improve readability, an emphasis added by the original authors has been removed.

generated”¹⁵, comprise a crucial business model component. Yusuph et al. (2010, p.312) use the same vocabulary as Teece and Giesen by also talking about “how value is captured” and “revenues generated”. They call this third element “profit equation”¹⁶.

Lastly, normative interpretation of the business model usually insist that the three above-mentioned components *presuppose each other*. For Yunus et al. (2010, p.312) value proposition and value constellation “need to fit together like pieces of a puzzle in order to generate” profit, “the financial translation of the other two”. Teece and Linden (2017, p.5) warn that [w]ithout the right balance between the creation, delivery, and capture of value, the model will not be in operation very long, at least not by a for-profit enterprise.”

Amongst normative business model contributions, some attempted to give a holistic overview about the most prevalent core components and the logic and functioning of the business - *business model representations*. (Zott et al., 2011, p.8; Zolnowski et al., 2014, p.718). The study of Amit and Zott (2002) on business model design, the dissertation of Osterwalder (2004) seeking to establish a business model ontology, and the ‘Business Model Canvas’, developed based on the business model ontology by Osterwalder and subsequently refined by him and many other scholars (Osterwalder et al., 2010; Joyce & Paquin, 2016) are amongst the most recognised business model representations.

The Business Model Canvas in particular manages to combine universal applicability with a practice-oriented focus and divides the business model into four main areas that give rise to nine building blocks. This structure seems to be particularly well-suited for examinations following a practice-oriented, quantitative data-involving approach such as this dissertation, which has been highly influenced by the Business Model Canvas. Therefore, the following sections presents this model in more depth.

2.2.5 Business Model Canvas

As noted above, the Business Model Canvas (BMC) is certainly amongst the most prominent models of the normative camp of business model theory. It is known to be the most cited and practically applied academic business model representation (Zolnowski et al., 2014, p.718).

¹⁵ To improve readability, an emphasis added by the original authors has been removed.

¹⁶ To improve readability, an emphasis added by the original authors has been removed.

The objective of the BMC is the description and visualisation and development of existing and new business models “in a shared language” (Wallin et al., 2013, p.266). This standardised, simplified and well-illustrated toolkit to design business models is unconventional compared to most existing academic literature due to its strong focus on practicability (Oliveira & Ferreira, 2011). Whereas Osterwalder, Pigneur, Smith and others created the original BMC in 2010, various additions have been made by other scholars, culminating in variations of the BMC such as the ‘Service Business Model Canvas’ (SBMC) by Zolnowski et al. (2014) and, more notably, the ‘Triple Layer Business Model Canvas’ (TLBMC) by Joyce and Paquin (2016).

Osterwalder et al.’s (2010, p.14) definition of a business model as “the rationale of how an organisation creates, delivers and captures value” is in line with the typical key elements of normatist definitions presented in the previous section. This definition gives rise to “four main areas of a business: customers, offer, infrastructure, and financial viability“. Whereas the first three of these areas more or less are connected to the creation and delivery of value, financial viability is devoted to value capture. These four main areas of a business then can be further divided into nine “basic building blocks”, presented in Figure 4.

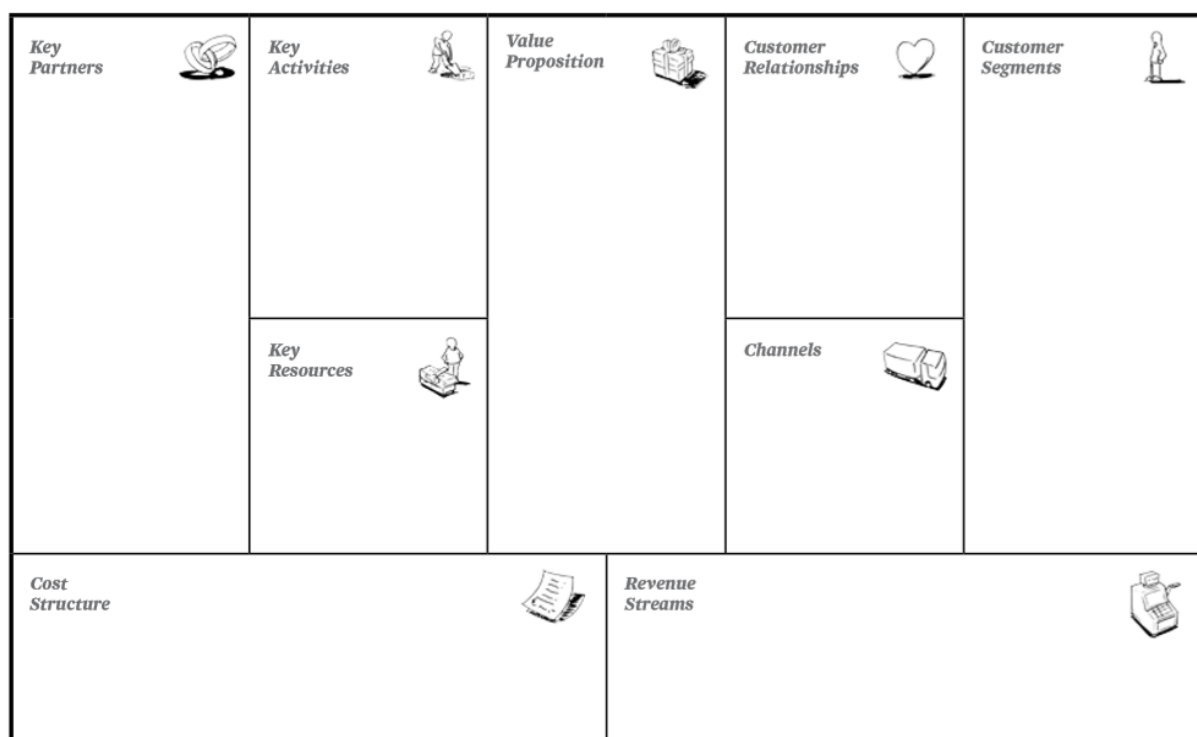


FIGURE 4 | Business Model Canvas by Osterwalder et al. (2010, p.44)

Whereas the customer area is comprised of (1) 'customer segments', (2) 'customer relationships' and (3) 'channels'; the (4) 'value proposition' is a display of the firm's offer. (5) 'Key activities', (6) 'key resources' and (7) 'key partners' mark the infrastructure of the business. Lastly, the (8) 'cost structure' and (9) 'revenue streams' can both be viewed as indicators for a company's financial viability (p.16-43).

Firstly, customer segments incorporate the different groups of a firm's potential clients that are often equivalent to market segments. Secondly, customer relationships are those kinds of relationship established with particular customer segments. Thirdly, the building block channels describes the ways a firm chooses to deliver value. Fourthly, it is not by coincidence that value proposition is at the centre of the BMC – it is the most important of the nine building blocks. As noted above, some authors equate value proposition with value creation and delivery. For Osterwalder et al. it is an expression of the firm's offering and includes all value-creating products and services (p.20-29).

Fifthly, key activities are those crucial things a company must put into place in order to make its business model work. Sixthly, the assets used for this purpose are the key resources. Seventhly, the most central stakeholders involved in this are called key partners. Eighthly, on the financial part of the business model, the cost structure gives an overview about all expenses incurred. The cost structure can follow either a 'cost drive' or a 'value drive' and can consist of fixed as well as variable costs. Lastly, revenue streams give information about the other side of the profit/loss equation, the nature and size of revenues. Cost structure and revenue streams can substantially indicate what business model theorists call value capture (p.30-41).

Osterwalder et al. (2010, p.16-41) try to make it clear to the reader that all nine building blocks are indispensable for a successful business model, Even though they are important on their own, their interconnectedness cannot be overlooked when looking at them, The 'canvas' metaphor highlights that whilst these building blocks are universal components for nearly all business models, the way in which they are 'coloured' can be unique for each business. Even though all of these nine building blocks are given equal importance by their creators, it is often argued that the value proposition block, located right at the centre of the canvas and with the most linkages, is the most significant one (Meertens et al., 2012, p.1695; Dudin et al., p.889; Coes, 2014, p.20).

The manner in which the BMC merges universal applicability with a practice-oriented focus is unprecedented, the number of references made to it in business model literature are an expression thereof. The BMC is directed towards entrepreneurs, yet respected by scholars. Its structured layer with the four main areas divided into nine building blocks make it both very transparent and easy to grasp, yet leave leeway to fill these areas and building blocks with the complexities, peculiarities and contradictions each unique individual business, sector and industry might have. This structure seems to be particularly well-suited for examinations following a practice-oriented, quantitative data-involving approach such as this one. That is the reason why the BMC was selected to constitute the cornerstone of this papers methodology, together with the POA analysis, circumscribed in the following section.

2.3 Key elements of an LCC business model: the POA analysis

This section gives an overview about the product and organisational architecture (POA) analysis, which has been created as a tool to analyse and compare business models and is applicable on airlines in general and low-cost carriers in particular. Mason and Morrison (2008) were the first ones to use the POA analysis on airlines when they looked at six European LCCs. Subsequently, Heinz and O'Connell (2013) applied the model on the African case, clustering more than 50 African airlines and afterwards carrying out an in-depth POA analysis for eight of them. Finally, Meichsner et al. (2018) compared five leading African airlines, also partly making use of the POA framework. Lenartowicz et al. (2013, p. 10) view the POA analysis as "a tool to examine airline business models".

According to Mason and Morrison (2008, p. 75-77), the POA approach has been designed to assess both the airlines' product architecture, circumscribing mostly the 'benefit drivers', and organisational architecture, including the 'cost drivers', and to put it into relation to the market structure and the company's strategy to generate revenues. As the comparison of Figure 5 and 6 highlights, the POA framework is *per se* not exclusively useful for the analysis of airline business models, but for company business models in general. Figure 5 shows the general POA of a firm, highlighting the three cornerstones of the model, product architecture, organisational architecture, and profitability. Noteworthy is that the concept includes market structure as a somewhat relatively unrelated side component of a business model.

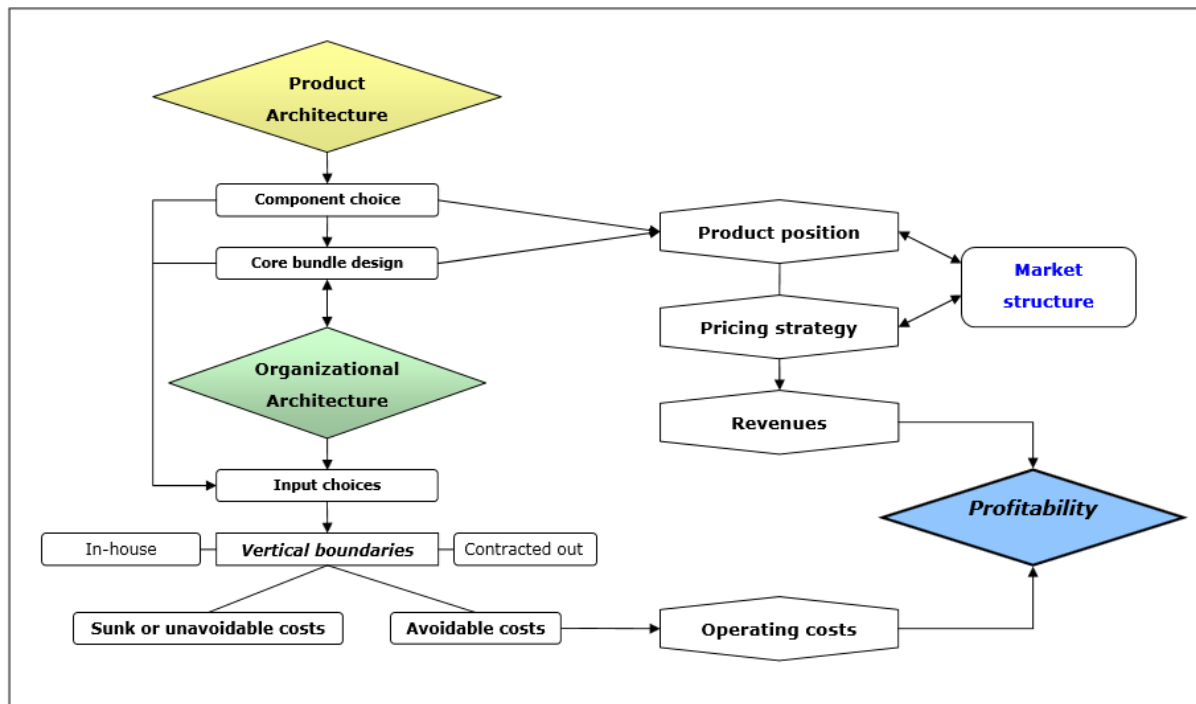


FIGURE 5 | General product and organisational architecture of a firm (Mason & Morrison, 2008, p.76)

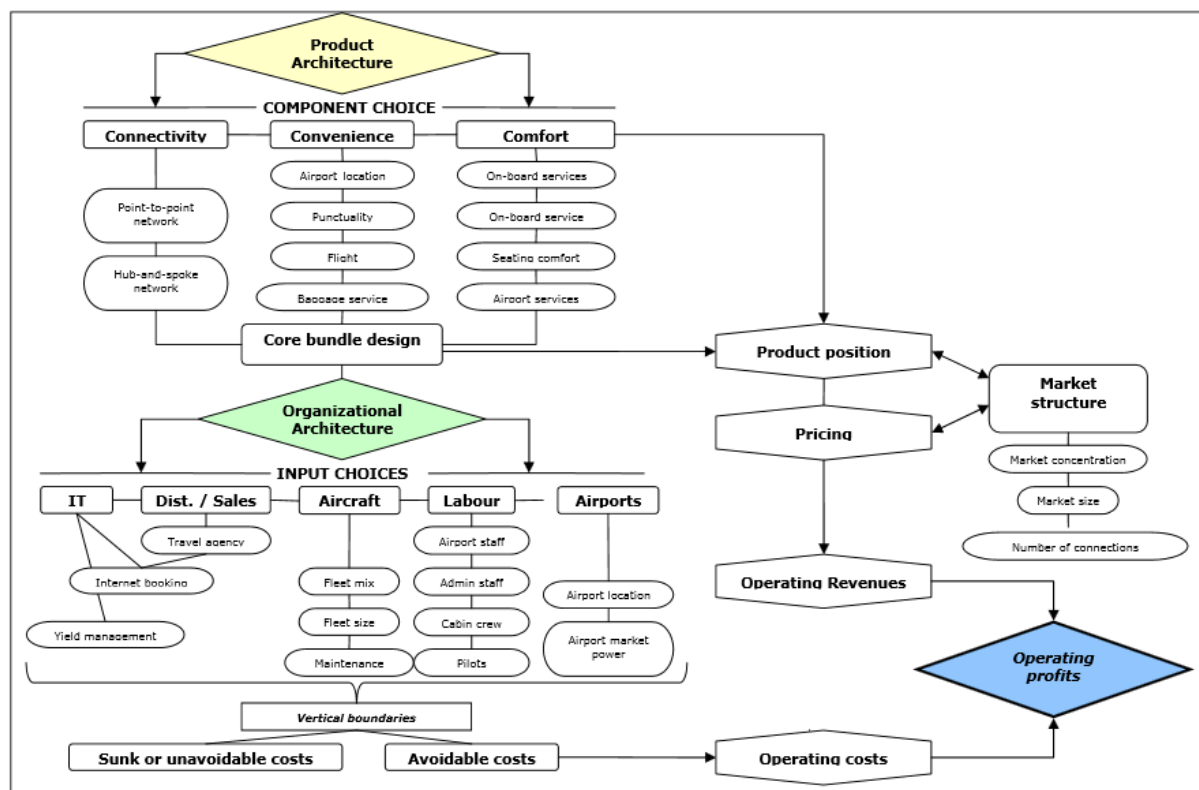


FIGURE 6 | Schemata of product and organisational architecture of airlines (Mason & Morrison, 2008, p.76)

Figure 6 illustrates the application of the POA framework on airline business models. In this regard, the benefit drivers are chiefly related to the consumer, therefore the product architecture includes the factors connectivity, convenience, and comfort. Cost drivers and thus parts of the organisational architecture are the factors IT, distribution/sales, aircraft, labour and airports - therefore mostly efficiency-related issues. In the model, product position, pricing, and consequently also the market structure are influenced by the product architecture. The latter factors in turn result in the operating revenues, which, together with operating costs (determined by the organisational architecture) lead towards the pillar benchmark operational profits. Interpreting the model according to the earlier introduced four main areas of a business, one could interpret the product architecture as a display of customers and offer (value proposition), the organisational architecture as a tandem of infrastructure, and profitability as a reflection of a firm's financial viability.

2.4 Research gap

Generally, literature about the Sub-Saharan African aviation industry is scarce – similar applies to LCC carriers in the region¹⁷ and business models of African airlines in particular. Whereas airline business models have been subject of study in an immense amount of literature, the applicability of them to the African context has been barely examined (Heinz & O'Connell, 2013, p. 72). Heinz and O'Connell (2013) as well as Meichsner et al. (2018) with their aforementioned POA analyses of African airlines have made first strides towards changing that. Both studies looked at nine different dimensions of an airline's business model and had similar findings, concluding that Ethiopian Airlines is the leader in the African aviation industry and outcompetes its competitors in terms of profitability, fleet and market force.

However, while Heinz and O'Connell (2013, p. 77) identified clusters of 'true' and 'emerging' LCCs, they expressed doubts about the feasibility of the LCC model in the African context and raised the concern that most LCCs on the African continent are very constrained to a particular region. As of July 2019, the author of this paper could not find any literature that is focused entirely on their concern in the African context¹⁸, but a multitude of articles and

¹⁷ With the noteworthy exception of Bowen, 2019

¹⁸ Except for, yet again, Bowen (2019), which nonetheless has no particular business model focus.

papers looking at the preconditions for a profitable LCC model in general (amongst them Hirsh, 2017 and Centre for Aviation, 2009).

Given this lack of business model research of African low-cost carriers, it seems to be an imperative task to fill this research gap and conduct a study exclusively focused on that. As this chapter has highlighted, there is a need to examine the business models of the few existing LCCs in the Sub-Saharan region. Comprehending to what extent they exhibit the peculiarities of a classic-case LCC business model can be critical in order to find out whether the abovementioned detrimental environmental factors are holding African low-cost aviation back or whether they gave rise to a particular 'African LCC business model'. The following chapter is going to illustrate how this investigation can be conducted.

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3 Methodological approach

The following chapter will outline the methodological approach and structure pursued by this dissertation. As the introductory chapter already has revealed, a qualitative business model analysis of African low cost carriers, other LCCs in the Southern Hemisphere, and Ryanair is carried out. While the first section is going to introduce the 'Research Onion' model of Saunders et al, the subsequent sections will explain the research philosophy and approach employed in the study. Section 3 illustrates both the method and strategy chosen when researching. Following that will be an explanation of the time horizon as well as techniques and procedures of the study. Section 6 provides more detail in terms of the research design, including (1) a closer look at the definition of a 'blueprint' LCC operator, (2) a comparison of the Business Model Canvas and the product and organisation architecture framework, two models that have been introduced in the previous chapter, as well as the choice of (3) business model elements, (4) their indicators, and (5) the sample composition of the study. The final section concludes the methodological outline by addressing research expectations and objectives.

3.1 Introduction: the Research Onion

The research methodology of this master's dissertation is structured in a way that broadly follows Saunders et al.'s (2016, p.124) 'Research Onion' model. This metaphorical approach to research methodology for business studies is widely accepted and reiterated by other textbook-style articles about research methodology such as Mayer (2015, p.53-54) and Venable (2011, p.125)¹⁹. The purpose of the model is illustrating the stages a researcher passes during the process of formulating a suitable research methodology. The idea is that, starting from the outside layer to the core, each layer of the onion adds more detail, depth and certainty to the researcher's methodological framework.

Due to the model's open step-by-step approach it can be applied on very different research methods and researchers from disciplines as different as business studies, social sciences and exact sciences are making use of it (Melnikovas, 2018, p.30). This paper's examination makes

¹⁹ Venable (2011) refers to an earlier version of the Research Onion from 2009.

use of the model, which is visualised in Figure 7 below, particularly because of this wide applicability. Moreover, another reason for choosing the Research Onion was its step-by-step approach that ensures the reader a formidable degree of transparency.

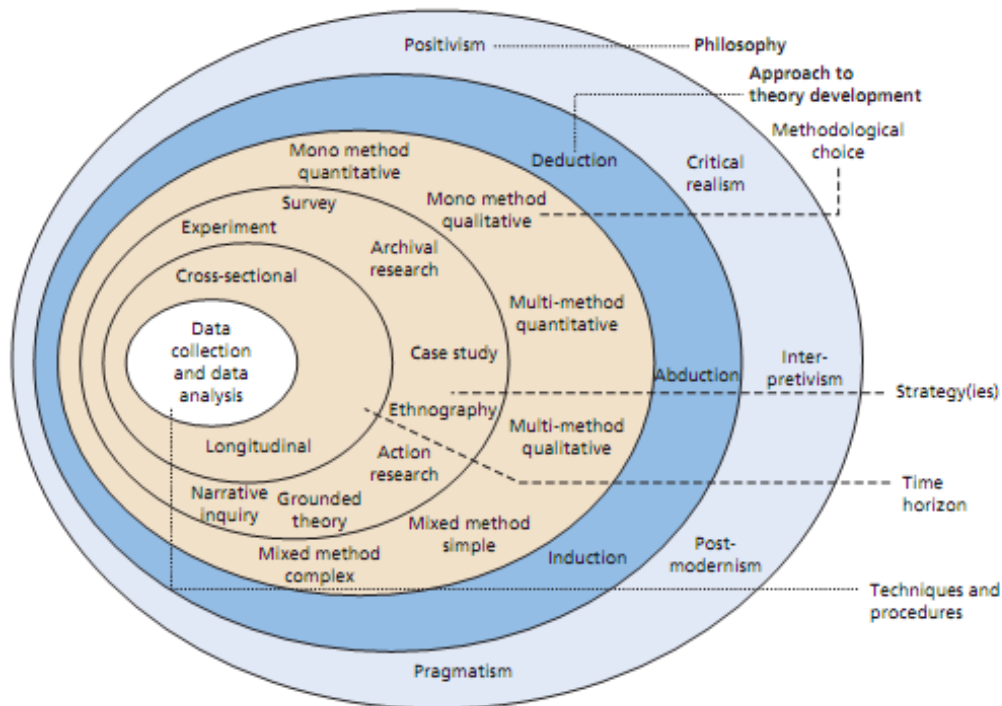


FIGURE 7 | The Research Onion by Saunders, Lewis and Thornhill (Saunders et al., 2016, p.124)

3.2 Research philosophy and approach

The outer layer of the Research Onion, the research philosophy, creates the foundation of the research process and shapes aspects such as the research question formulation as well as the researcher's choice of method (Mayer, 2015, p.54). There are alternative names for the research philosophy, for example 'worldview' or 'paradigm' (Creswell, 2014, p.7). Saunders et al. (2016, p.127-128) defined three areas comprising a researcher's philosophical stance: ontology, epistemology, and axiology.

This paper is inspired by an idealistic ontology. The researcher views models, quantitative facts and physical evidence as necessary tools, but is convinced that most items we observe

in our world are shaped, constructed and interpreted by humans. What follows from this is a rather pragmatic epistemology with actions, situations and consequences at the centre and an application-oriented stance on research methods (Creswell, 2014, p.11). Consequently, the axiology of this dissertation acknowledges the existence of subjective values and their undeniable influence on research.

As this paper looks at existing business model theory, modifies it and applies it to the African LCC sector, the research approach taken is best described as abductive. Interactions between the specific (African LCCs, their environmental challenges, and their business models) and the general (business model theory) shape the research process and lead to the phenomenon that this paper moves from theory (Chapter 2) to data (evaluative part of Chapter 4) back to theory (explanatory part of Chapter 4; Chapter 5). This approach resembles to a large extent Saunders et al.'s (2016, p.148) elaboration of an abductive research approach, which is often used by business and management researchers.

3.3 Research method and strategy

In line with the pragmatic epistemology (Creswell, 2014, p.11), which is accommodative of different research approaches, this dissertation follows a qualitative research approach using quantitative data for a part of the examination. Accordingly, quantitative data is analysed and subsequently interpreted in a qualitative manner, using additional qualitative resources. This research method can be categorised as a multi-method qualitative study, which denotes qualitative research design making use of more than one technique of data collection (Saunders et al., 2016; p.168).

The purpose of this multi-method design is to conduct a combined study, consisting of an evaluative and an explanatory component. On the one hand, the evaluative approach to the research design is particularly well-suited for examinations that include comparisons (Saunders et al., 2016, p.176). As the evaluative part of the examination compares business model components of different low-cost airlines, this approach seems consequently appropriate. On the other hand, the explanatory approach is especially useful when explaining the nature and relationships of different variables (Saunders et al., 2016, p.176). The quantitative data gathered in the first part of the examination requires qualitative

interpretation, especially with regards to the nature and relationships of the different variables examined. An explanatory qualitative part is able to achieve this.

In terms of the research strategy, the methodological linkage between the research philosophy and the choice of methods for data collection and analysis (Saunders et al., 2016, p.177), Archival and Documentary Research has been chosen for this paper. It is a strategy that can be applied to both quantitative and qualitative research (Saunders et al., 2016, p.178). Therefore it is also applicable to the qualitative multi-method research approach to examine quantitative data, pursued by this dissertation. The secondary sources that are used for the examination are the annual reports of the airlines under investigation as well as certain online databases, as well as, for the explanatory interpretation of the quantitative results, scientific articles and papers.

3.4 Time horizon

The evaluative part of this dissertation is going to examine the KPIs of the LCCs in the sample gathered through their respective annual reports and online databases within a time frame of three years. Data from 2014/2015 is compared to figures from 2017/2018. This specific time frame has been chosen in order to accommodate three limiting factors. Firstly, the gap between the two points of study should not be too narrow as annual reports and database statistics are published in different time intervals and differences in accounting practices could make an evolutionary process invisible.

Secondly, on the other hand the difference of the two points of study could not be longer than three years as this is the foundation year of Safair, the 'youngest' airline in the sample. Lastly, the sample size does not allow to derive a meaningful interpretation of data for more than two points in time. The explanatory interpretation of the quantitative data will look at the entire time frame between 2014 and 2018. All of the above-mentioned makes the examination of this paper a longitudinal study (Saunders et al., 2016, p.200-201).

3.5 Techniques and procedures

The techniques and procedures required for a consistent research design incorporate research ethics, establishing the quality of research, as well as practical considerations such as the role of the researcher (Saunders et al., 2016, p.201-209). With regards to research ethics, it is noteworthy that the procurement of data is not of particular concern as only secondary data has been used. Nonetheless, the discussion of the LCC subject in itself cannot be conducted without raising ethical concerns. At the time of writing in July 2019, Belgium, Germany and the Netherlands recorded their highest ever temperatures and in countries such as Germany discussions about an increased taxation or partial ban of European LCCs increasingly gained momentum (Henley, 2019; Janecek, 2019).

Therefore, discussing the business models of LCCs from an exclusively economic point of view as the evaluative part of this paper does, seems controversial at the very least. The researcher is well aware of this fact and in the process of conceptualising the research design there have been considerations of including the environmental component directly into the evaluative part of the examination. Eventually, these considerations have been dismissed as this would have added a level of complexity, vague assumptions and future predictions to the research design that this study alone would not have been able to contain. Therefore, instead of including it in the evaluative data analysis (e.g. by incorporating parts of the multi-layered Business Model Canvas), the explanatory part of the paper is going to take a stance on the environmental component as well and especially the conclusive remarks are going to highlight this aspect.

In order to ensure credibility in the qualitative research undertaken by this dissertation, the researcher deems the criteria (1) truth value, (2) consistency, (3) neutrality and confirmability, as well as (4) applicability as necessary standards. Firstly, truth value denotes the recognition that multiple realities exist and researchers' devotion to capture the depth of what is observable in their qualitative methodological frameworks and examinations while trying to provide the highest possible level of transparency. Secondly, consistency refers to the presence of an independent reader's ability to follow the researcher's 'decision-trail' – meaning the decisions made throughout the research project have been clear and transparent.

Thirdly, neutrality and confirmability entails that the researcher deals with all research objects in an objective manner in an attempt to reduce bias to the lowest possible extent, leaving a chain of evidence that could be well-traced during a confirmability audit. Lastly, applicability means that the researcher gives consideration to whether the results could be applied to other objects of research in a different context (Myburgh & Poggenpoel, 2007, p.65; Noble & Smith, 2015, p.34-35).

The fact that this paper refrains from the use of primary sources is also linked to the commitment to a high level of reliability and validity. Nevertheless, the researcher is well-aware that particularly annual reports should be analysed with a grain of salt as they are published by the organisation under investigation themselves. The challenging and interpreting of the evaluative findings in the explanatory part of this paper's examination should be understood as an effort towards triangulation. Triangulation is often used by non-positivist studies in order to add depth, breadth, complexity and richness to the study (Saunders et al., 2016, p.207). Lastly, the author is well-aware of his role as external researcher and the risks and limitations that go hand in hand with this role.

3.6 Research design

As mentioned in Subsection 3.3, the examination carried out for this dissertation uses a multi-method qualitative research design with an Archival and Documentary Research strategy. This section discusses the research design in further detail, including (1) a definition of a 'blueprint' LCC operator, (2) a comparison of two central models discussed in Chapter 2 and (3) their further development, (4) the choice of indicators for the evaluative part of the analysis, (5) the approach for the explanatory part of the analysis, and finally (6) the sample composition.

3.6.1 Definition of a 'blueprint' LCC operator

As previously mentioned, Ryanair amongst all low-cost carriers has one of the lowest cost structures globally and became the synonym for the 'no-frills model'. The Irish airline was founded in 1985 by the Ryan family and tried, with a mere 15 passenger aircraft, to take on Aer Lingus and British Airways on the London-Dublin route. Over the years the airline

continuously put its focus on cost-cutting and punctuality, especially after Michael O’Leary was appointed CEO in 1994 (Piludis et al., 2018, p.1-2). This approach, which had been a further evolution of the Southwest Airlines model, proved to be very popular and over the years Ryanair became Europe’s largest airline in terms of passengers, reaching 130m in 2017 (Inkpen, 2017, p.7; Piludis et al., 2018, p.1-2). Nonetheless, its stance on labour rights and environmentalism has earned Ryanair a lot of criticism from customers, shareholders, and observers (O’Sullivan & Gunnigle, 2009, p.252; Bowen, 2019, p.250; Piludis et al., 2018, p.2).

Due to its rigorous cost-focussed stance that turned out commercially successful, several studies analysing LCC business models have used Ryanair as a benchmark for comparison. The company’s business model seems to be particularly strong in terms of costs, profitability, market structure, labour and aircraft use, but not the ‘best in class’ amongst LCCs in terms of revenues, connectivity, convenience, and comfort (Mason & Morrison, 2008, p.81-84; Heinz & O’Connell, 2013, p.81). The fact that a single airline is leading on so many business model dimensions made it easy to determine Ryanair as a ‘blueprint’ LCC operator for this study and to subsequently compare it to the sampled LCCs from emerging markets. As the evaluative analysis of this paper is solely going to focus on economic parameters, the issues the airline has regarding environmental and labour issues are going to be part of the discussion only in the qualitative-interpretative part of the analysis.

3.6.2 Comparing the BMC and POA frameworks

Chapter 2 highlighted the evolution of business model theory and introduced with the Business Model Canvas (BMC) and the product and organisation architecture (POA) two models that pursue a normatist business model interpretation. Whilst the BMC is a general framework that goes beyond industries and sectors, the POA has been applied to the airline industry in general and the low-cost sector in particular. This subsection is going to compare both models and highlight their parallels. This comparison builds the foundation of the methodology developed in the subsequent subsection.

Both models have been categorised according to the four ‘main areas of a business’ as they were discussed in Chapter 2.²⁰ These independent categorisations have been summarised

²⁰ See pages 22 (for BMC) and 24 (for POA)

and illustrated in the 'BMC Architecture framework' (Figure 6). Connecting both categorisations in a single framework offers an opportunity to compare both business model concepts in a structured way.²¹ The comparison shows that, after all, Business Model Canvas and product and organisational architecture framework both seek to display the functioning of a business in a structured, normative way. Moreover, given that according to Osterwalder et al. (2010, p.15) most businesses have the same four main areas, it comes as no surprise that when compared according to these main areas, BMC and POA are not fundamentally different.²²

| MAIN AREA OF A BUSINESS | EQUIVALENT BMC ITEMS | EQUIVALENT POA ITEMS |
|----------------------------|------------------------|--|
| Customers | Customer segments | Product architecture |
| | Customer relationships | ▪ Connectivity |
| | Channels | ▪ Convenience ▪ Comfort |
| Offer | Value proposition | |
| Infrastructure | Key activities | Organisational architecture |
| | Key resources | ▪ IT |
| | Key partners | ▪ Distribution / Sales ▪ Aircraft ▪ Labour ▪ Airports |
| Financial viability | Cost structure | Profitability |
| | Revenue streams | Costs |
| | | Revenues |

FIGURE 8 | BMC Architecture framework: connection of the Business Model Canvas by Osterwalder et al. (2010) and the product and organisation architecture analysis by Mason and Morrison (2008), based on the four main areas of a business (Osterwalder et al., 2010, p.15). The item 'market structure' has not been considered here as it is not directly part of the business model (see Chapter 2).

²¹ The comparison has been made between the BMC and the airline industry specific POA model (Figure 6 on page 26)

²² Even when using the airline-specific POA framework for comparison as Figure 8 does

On the one hand, the customer area (customer segments, customer relationships, channels) and the offer area (value proposition) have direct BMC building block equivalents. Both areas constitute the product architecture of the POA analysis, which explains the benefit drivers (offer) that are chiefly related to the consumer (customers).²³ On the other hand, infrastructure (key activities, key resources, key partners) has three BMC constituents and with organisational architecture a direct POA counterpart. Lastly, the financial viability area is echoed by dimensions for costs and revenues by both BMC and POA as well as a profitability dimension of the POA.

These similarities show that the airline-specific POA can be considered a BMC-related concept. Moreover, the categorisation into the four main areas of a business has proven particularly useful as it highlights which POA items are more central than others and which ones have to be considered for what kind of purpose. For example, a sub-factor of the organisational architecture such as 'IT' undoubtedly bears some significance, but is not comparable to a key factor such as 'profitability'. The subsequent subsection of this dissertation is going to put these findings on a more application-centred level and identifies the dimensions that are central for the examination of Sub-Saharan African LCCs.

3.6.3 Choice of key business model elements to be examined

This subsection discusses which of the elements from the BMC and POA frameworks are the most essential ones for a business model analysis of low-cost carriers. These selected dimensions are going to constitute the methodological foundation of the examination. The methodology will focus on those core variables and subsequently operationalise them through specific indicators in the evaluative part of the analysis. The qualitative interpretation is also going to centre around those dimensions, albeit in a more general way.

The previous subsection has established that both BMC and POA are structured around the four areas of a business customers, offer, infrastructure, and financial viability. As this dissertation analyses low-cost carriers, the operationalisation should best be linked to the

²³ See page 24 for a more detailed characterisation of the POA dimensions

airline-specific POA framework, while maintaining the theoretical foundations provided by the BMC. At the same time, due to the sample size, the study's longitudinal approach, as well as the depth of analysis (qualitative, but evaluating quantitative data), it would be overambitious to try covering all eleven POA dimensions shown in Figure 6.

Thus, it seems consequential to choose for each main area of a business one central POA dimension to create a holistic overview. Given the fact that customer and offer are both covered by the product architecture items, it seems logical to choose one product architecture dimension, one organisational architecture dimension (as an equivalent to infrastructure), as well as one dimension amongst profitability, costs, and revenues (as an equivalent to financial viability).

With regards to the selection of dimensions for the analysis of a low-cost airline, on the one hand it seems central to highlight costs as arguably the most central aspect for LCC business models (as presented in Chapter 2). On the other hand, airline-specific dimensions should be considered too. In terms of product architecture, connectivity differentiates between airline-supplied hub-and-spoke networks and passenger-supplied point-to-point networks. According to Mason and Morrison (2008, p.75-77), connectivity is the most central element when it comes to distinguishing between different airline business models. This makes the dimension arguably the most airline-specific of all.

Lastly, within the organisational architecture dimensions, aircraft seems to be the dimension that is both most influential and best to put into operation. For the selection on the organisational architecture dimension, this paper followed a process of elimination in line with prior findings of Meichner et al. (2018, p. 194-95). Firstly, there was a lack of data for both the IT and the distribution/sales dimension. Secondly, the airports dimension was dismissed, because with very few exceptions such as Lanseria in Johannesburg, secondary airports are non-existent in Africa (Bowen, 2019, p.129). Finally, due to the in Chapter 2 mentioned moral discussions about insufficient wages for employees of LCCs, making labour one central dimension of examination for a 'successful' LCC model would be both questionable and unethical.

| INDEX | BENCHMARKING METRICS | INDEX | BENCHMARKING METRICS |
|---------------|--|------------------|--|
| Profitability | Operating margin | Comfort | Load factor Economy seat width Economy seat pitch |
| Costs | Unit cost per available seat kilometre (ASK) <i>(Proxy Unit cost per airport / unit cost per airplane)</i> | Aircraft / Fleet | Aircraft utilisation (hours per day) Most populous aircraft type (in % of total fleet) Unit revenue per airplane Unit profit per airplane Aircraft sectors per day |
| Revenues | Yield Revenue per ASK | Labour | Passengers per employee Employees per aircraft ASK per employee |
| Connectivity | Network density (departures per airport per day) Routes offered Connectivity All destinations available | Market Structure | Average HHI on capacity (seat) Median HHI on capacity (seat) Average no. of competitors per route Capacity share of seats |
| Convenience | Average frequency per route (per week) Punctuality | | |

FIGURE 9 | Overview of indicator choice by Meichsner et al. (2018, p. 194-95) for their POA analysis, highlighting the dimensions costs, connectivity and aircraft and the respective indicators used for this study. Benchmarking metrics highlighted in green are those used by Meichsner et al. and this study. Benchmarking metrics highlighted in yellow are those used only in this study to replace other metrics where data was not sufficiently available.

Accordingly, from the nine business model-related dimensions of the POA analysis, connectivity, aircraft and costs have been selected for the business model analysis of African LCCs in this paper. This analysis is going to cover all four main areas of a business (customers, offer, infrastructure and financial viability), and considers region-specific, industry-specific and sector-specific factors. In order to distinguish it from a full-fledged, standard POA analysis, it is consequently referred to as 'Cost-connectivity-fleet Analysis'. The next subsection will provide an overview about the choice of indicators for the evaluative examination.

3.6.4 Choice of indicators for the empirical analysis

When selecting indicators, this dissertation followed the approach of Meichsner et al. (2018, p. 194-95) during their POA analysis of African airlines, illustrated in Figure 9. For costs, they chose the unit 'cost per available seat kilometre (ASK)', a standard measure mentioned in most airlines' annual reports. For the dimension connectivity, they looked at several indicators, such as 'network density', 'routes offered', 'connectivity', and 'all destinations available', all retrieved from the website *OAG Analytics*.²⁴ For the aircraft dimension, they analysed 'aircraft utilisation', 'most populous aircraft type' and 'aircraft sectors per day'. To obtain this data, they looked partly once again at the companies' annual reports and partly used the website *Flightglobal*.²⁵

The research methodology of this dissertation used these operationalisations as a foundation, but made adjustments when necessary. Whilst the cost analysis' operationalisation remains the same ('unit cost per ASK'), due to a lack of data for the South African LCC Kulula, a proxy metric had to be calculated. This proxy consists of the average value of 'unit cost per airport' and 'unit cost per airplane' and was scaled according to the 'best-in-class principle' in comparison with both Indonesia AirAsia and Ryanair.²⁶ Just as in the POA analysis of Meichsner et al. (2018), the values for the cost dimension stem from the airlines annual reports. In some instances, the airlines websites were used as sources, too.

²⁴ <https://www.oag.com/analytics>

²⁵ <https://www.flightglobal.com/products/>

²⁶ This was done under the assumption that one of the two airlines would be the 'best in class' of the sample, which in turn was assumed because in no other parameter of the examination any other airline was leading.

The connectivity dimension is only focussed on 'network density' (departures per airport per day) as well as the 'number of routes offered'. The metrics 'connectivity' and 'all destinations available' had to be dismissed due to a lack of data. Generally, in the connectivity dimension alternative data sources had to be accessed as Meichsner et al's (2018) main source, OAG Analytics refused to provide data to this study.²⁷ The network density metric, departures per airport per day, could be calculated by looking at take-offs at all (regular) airports of each airline on four selected dates. The online database used for this was Flightstats.org. The number of routes offered was retrieved from a number of sources, including annual reports, websites, extrapolations and other sources.²⁸

With regards to the aircraft/fleet index, from Meichsner et al. (2018) only the 'daily hours of aircraft utilisation' and the share of the 'most populous aircraft type' remain; the metric aircraft sectors per day had to be eliminated as it had been retrieved from Flightglobal. This examination focused on data from the website Planespotters.net as well as annual reports and on the respective airline websites. As the metric aircraft utilisation was only available for four of the nine sampled airlines, the supporting metrics 'unit revenue per airplane' and 'unit profit per airplane' have been added in order to ensure comparability amongst the sample.²⁹

3.6.5 Analytical approach for the qualitative interpretation

As mentioned at an earlier point in this study, the findings of the evaluative business model analysis are subsequently interpreted in an explanatory way in order to 'fill the gaps' that the evaluative analyse leaves open and develop its findings further. This will be done by firstly trying to find possible explanations for the findings by analysis of a variety of sources – ranging from the annual reports used in the data analysis over scientific sources to newspaper and media articles.

²⁷ In an exchange of phone calls and emails, a representative from OAG Analytics tried to sell their data for an amount of money that was far beyond the reach of a non-commercial paper such as this master's thesis.

²⁸ A more comprehensive and detailed overview of the examinations sources can be found at Figure 11-13 as well as the attached Excel file.

²⁹ To compute the overall fleet index, for airlines where all four metrics were available, the ratio was $4+4+1+1/10$ (Aircraft utilisation + Most populous aircraft type + Unit revenue per airplane + Unit profit per airplane); for others it was $0+4+1+1/6$.

In the last part of Chapter 4, both evaluative and explanatory findings are adduced in order to derive the ramifications they have for Sub-Saharan African low-cost carriers, differentiating between areas of similarity and areas of difference between the African LCCs and Ryanair. Amongst the areas of difference, yet again there will be a variation, between areas that could be changed or improved and areas that cannot be compared due to differences in the operational environment. Moreover, this section of the analysis also seeks to incorporate factors that the evaluative section is unable to include. This is especially a hint towards the environmental ramifications.

| CONTINENT | COUNTRY | NAME | ICAO | IATA | FOUNDED |
|------------------------------|----------------------------|------------------------|---------|------|---------|
| Africa | Kenya | Jambojet ³⁰ | JMA | JM | 2013 |
| Africa | South Africa ³¹ | Fastjet | Various | FN | 2012 |
| Africa | South Africa | Kulula | CAW | MN | 2001 |
| Africa | South Africa | Mango | MNO | JE | 2006 |
| Asia & Pacific | Indonesia | Citilink | CTV | QG | 2001 |
| Asia & Pacific | Indonesia | Indonesia Air Asia | AWQ | QZ | 1999 |
| Latin America & Caribbean | Brazil | Azul | AZU | AD | 2008 |
| Latin America & Caribbean | Brazil | GOL | GLO | G3 | 2001 |
| Europe | Ireland | Ryanair | RYR | FR | 1985 |

FIGURE 10 | Sample composition (ICAO, 2017; own research on annual reports)

³⁰ As Bowen (2019, p.2) notes, due to unknown reasons, the ICAO list missed some airlines that are widely considered as LCCs. In Sub-Saharan Africa this applied to Dana Air (Nigeria) and Jambojet (Kenya, subsidiary of Kenyan Airways). For the latter sufficient data is available online and thus it had been included in the sample.

³¹ Seat of holding company. The initial Tanzanian operations had been ceased as of July 2019.

3.6.6 Sample composition

The sample used by this paper are all LCC airlines in Sub-Saharan Africa (test group) and the rest of the Southern Hemisphere³² (peer group) for which data in the examination period could be retrieved. The Southern Hemisphere as a geographic limitation for the peer group sample was chosen following Bowen's (2019, p. 1) observation, highlighting that the LCC segment currently witnesses a significant growth outside the traditional markets of North America and Europe: "With a couple of notable exceptions, budget airlines in emerging markets (defined here as Latin America, sub-Saharan Africa, the Middle East and North Africa, Eastern and Central Europe, and Asia-Pacific outside of Japan, Australia, and New Zealand) have received relatively little scholarly attention, but their rapidly growing significance warrants careful scrutiny." Subsequently, the initial sample had been composed based on a list by the ICAO (2017) and then was further narrowed down after eliminating all airlines that did not publish annual reports on their website.³³ The composition of the final sample is displayed in Figure 10.

3.7 Research expectations and objectives

The presented research design is expected to examine the research question and to explain how the business model of Sub-Saharan African LCCs is structured with regards to costs, connectivity, and fleet structure. The comparison with Ryanair as an airline with a 'typical LCC business model' will highlight the peculiarities of the carriers in the region. This and the comparison with the peer group of LCCs from the Southern Hemisphere will give indications whether one can speak of a specific 'African LCC business model'. However, it is not only the purpose of this study to identify this very model, but to go one step further and to critically take a stance on the feasibility and sustainability of this model.

The motivation of this dissertation is to find give African LCCs somewhat a 'situation assessment' that could be a vital component in paving the way for a future aviation market in Africa that manages to respond to the complex task of operating an economically viable

³² With the exclusion of Australia and New Zealand as non-emerging markets according to Bowen (2019, p.1).

³³ Those airlines were contacted via email, but in all cases without any response. One significant South African airline, FlySafair was called due to its importance for South Africa, Africa's LCC core market. The respective agent informed me that the airline does not need to publish an annual report according to South African law and stated that there were no interest to share any financial or operating data with the public.

service while keeping negative impediments to people at the lowest level possible. The research objectives are on the one hand finding out where the Sub-Saharan airlines stand in terms of costs, connectivity and fleet structure, especially compared to Ryanair and peers from other regions, and on the other hand providing readers, decision-makers and scholars alike with recommendations for the development of the Sub-Saharan LCC sector and transportation sector on a broader scale in the future.

4 Research findings

This chapter deals with the research findings in four different steps. Firstly, the quantitative data of the analysis for the three dimensions costs, connectivity and fleet structure is presented and discussed. Secondly, additional explanations for each of the three dimensions and their interaction are sought. The third section of this chapter traces the ramifications of the research findings for Sub-Saharan African LCCs. Areas where their business model scores similarly as Ryanair is looked at, as well as areas where this is not the case. Regarding the latter, whether or not their business model would and could improve if adjusted is discussed. Lastly, all these interpretations are compounded to a conclusion.

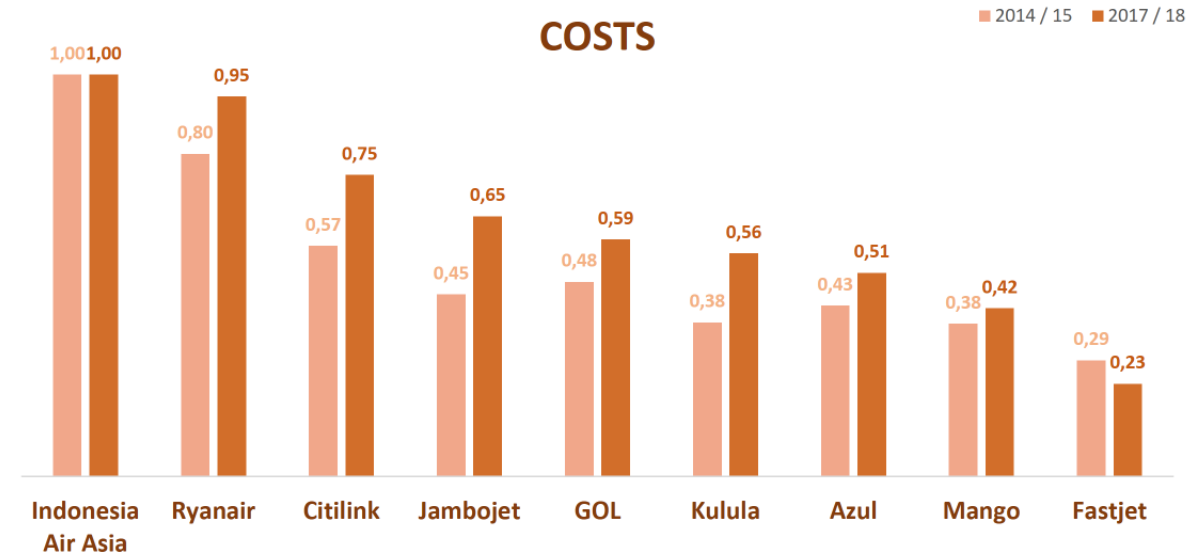
4.1 Findings of the Cost-connectivity-fleet Analysis

The partial POA analysis carried out in this paper examined key performance indicators (KPIs) from the dimensions costs, connectivity, and fleet structure.³⁴ In order to avoid confusion with a full-fledged, standard POA analysis, it is consequently referred to as 'Cost-connectivity-fleet analysis'. Whereas each dimension has a unique unit of measurement for each indicator, in order to compare them effectively, in the end all values were scaled according to a 'best-in-class principle' in which the best-performing airline receives a score of 1.00 and the other airlines a value between 0.00 and 1.00. With the exception of the cost KPI, where the lowest possible value is 'the best', 'best in class' can be equated to 'highest value in the sample'.

4.1.1. Costs

The research findings of the cost dimension, presented in Figure 11, give rise to the observation that African airlines have a long way to go until they can compete with industry leaders in terms of costs. For both 2014/15 and 2017/18, none African LCC managed to obtain an index value above 0.66 or a unit cost below EUR Cent 4.7. On the positive side though, with the exception of 'worst-in-class' performer Fastjet (0.29 and 0.23 respectively), all African airlines improved in between the two points of study. Mango improved slightly from 0.38 to 0.42, Kulula (from 0.38 to 0.56) and Jambojet (from 0.45 to 0.65) improved significantly.

³⁴ Labelled as 'aircraft' in Meichsner et al. (2018)



| CONTINENT | COUNTRY | NAME | COSTS 2014/15 | | | COSTS 2017 / 18 | | |
|---------------------------|--------------|--------------------|--|------|-------------|--|------|-------------|
| | | | Unit cost per available seat kilometre (EUR Cent) | | Costs Total | Unit cost per available seat kilometre (EUR Cent) | | Costs Total |
| Asia & Pacific | Indonesia | Indonesia Air Asia | 2,89 | 1,00 | 1,00 | 3,05 | 1,00 | 1,00 |
| Europe | Ireland | Ryanair | 3,60 | 0,80 | 0,80 | 3,22 | 0,95 | 0,95 |
| Asia & Pacific | Indonesia | Citilink | 5,03 | 0,57 | 0,57 | 4,06 | 0,75 | 0,75 |
| Africa | Kenya | Jambojet | 6,38 | 0,45 | 0,45 | 4,71 | 0,65 | 0,65 |
| Latin America & Caribbean | Brazil | GOL | 5,96 | 0,48 | 0,48 | 5,17 | 0,59 | 0,59 |
| Africa | South Africa | Kulula | Proxy calculation | 0,38 | 0,38 | Proxy calculation | 0,56 | 0,56 |
| Latin America & Caribbean | Brazil | Azul | 6,79 | 0,43 | 0,43 | 6,01 | 0,51 | 0,51 |
| Africa | South Africa | Mango | 7,61 | 0,38 | 0,38 | 7,29 | 0,42 | 0,42 |
| Africa | South Africa | Fastjet | 9,98 | 0,29 | 0,29 | 13,22 | 0,23 | 0,23 |

FIGURE 11 | Research findings for the dimension ‘Costs’ (Jambojet, 2019; Kenya Airways, 2015; 2017; Fastjet, 2019b; 2016; 2018; 2019a; Kulula, 2019; Comair, 2015; 2017; 2018; FlyMango, 2019; South African Airways, 2016; 2018; Citilink, 2019; 2018; Garuda Indonesia, 2015; AirAsia, 2019b; 2015; 2018, 2019a; Ryanair, 2019; 2015; 2016; 2018; Azul, 2019; 2017; 2018a; 2018b; 2018c; 2018d; Gol, 2019; 2015a; 2015b; 2015c; 2018a; 2018b; 2018c)³⁵

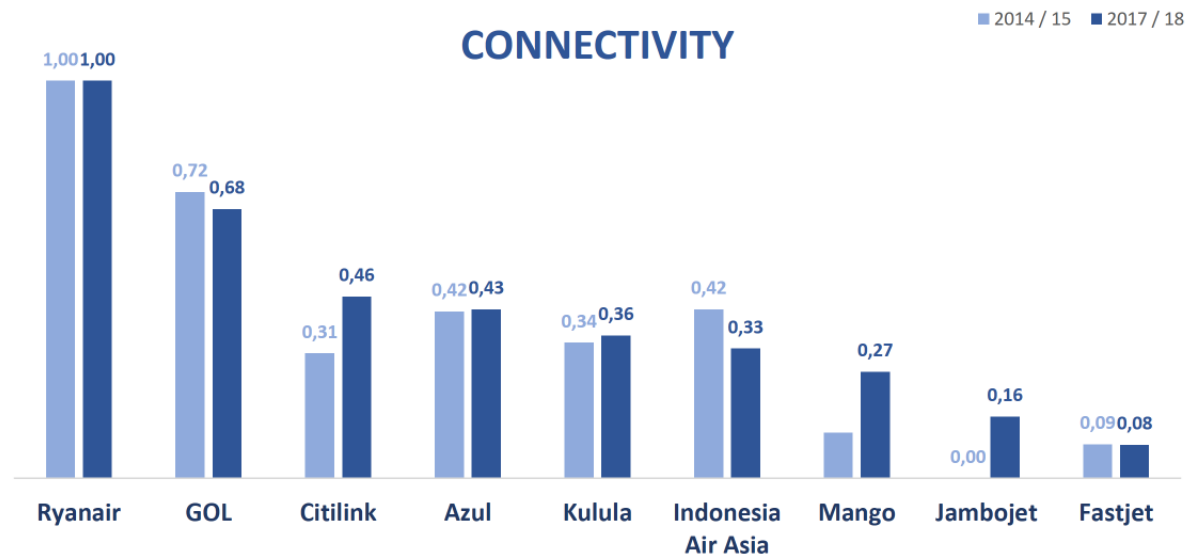
³⁵ All tables and graphs that visualise the research findings have been created with a German version of Microsoft Excel and therefore use the German way of number punctuation. This means, decimal letters are divided through commas instead of dots.

Contrary to prior expectations, on the cost dimension Ryanair is not the 'best in class'. With a unit cost per ASK of around EUR Cent 3, Indonesia AirAsia had the lowest cost performance at both points of study. Nonetheless, between 2014/15 and 2018/19 the gap between AirAsia and Ryanair narrowed, from 0.2 to 0.05. Moreover, it is also noteworthy that the second Asian airline in the sample, Citilink, had consistently lower costs than all African and South American airlines in the sample, albeit with broad gap to the top duo (0.23 and 0.2 to Ryanair respectively). On average, the Brazilian airlines Azul and Gol performed at a cost level similar to the one of Jambojet and Kulula (in the range of 0.35 to 0.5 in 2014/15 and 0.5 to 0.65 in 2017/18), whereas Mango and Citilink constituted the bottom of the sample in both points of study. Undeniable is the fact that during the observation period, the difference between cost leader AirAsia and the remainder of the sample decreased, with the sample average improving from 0.53 to 0.63 over the years.

However, the results in the costs dimension have to be taken with a grain of salt as many of the sampled airlines do not publish their own financials and often data from the parent group was examined. This is the case with Indonesia AirAsia, where the data is overall data from AirAsia, but also with all African airlines except Fastjet. Nevertheless, while Indonesia AirAsia's parent group is an LCC itself, the three African airlines are owned by FSNCs. As LCCs are expected to be more cost-efficient than FSNCs (Chapter 2), it is usually quite unlikely that taking the figures of the parent group leads to any positive deviation, therefore, those African LCCs are expected to perform as good or better as their cost rating here suggests.

4.1.2. Connectivity

With regards to the connectivity dimension, presented in Figure 12, it becomes apparent that here three African airlines, Mango, Jambojet and Fastjet, are at the bottom of the sample. Whereas Mango (from 0.11 to 0.27) and Jambojet (from 0.00/not operational to 0.16) at least show signs of improvement, Fastjet's evolution remains stagnant at an index level below 0.1. Unlike its African peers, Kulula manages to leave one Indonesian airline behind at both points of study, but falls with values of 0.34 and 0.36 behind its Brazilian peers and far behind Ryanair, which is dominating the sample with regards to cost (gap of around 0.3 to second-placed Gol at both points of study). In a similar manner Gol outshines the rest of the sample by 0.3 and 0.22 points respectively.



| CONTINENT | COUNTRY | NAME | CONNECTIVITY 2014/15 | | | | | |
|---------------------------|--------------|--------------------|--|------|----------------|------|--------------------|------|
| | | | Network density (departures per airport per day) | | Routes offered | | Connectivity Total | |
| Europe | Ireland | Ryanair | 8,76 | 0,59 | 1600 | 1,00 | 0,80 | 1,00 |
| Latin America & Caribbean | Brazil | GOL | 14,83 | 1,00 | 232 | 0,15 | 0,57 | 0,72 |
| Asia & Pacific | Indonesia | Citilink | 6,82 | 0,46 | 64 | 0,04 | 0,25 | 0,31 |
| Latin America & Caribbean | Brazil | Azul | 7,75 | 0,52 | 232 | 0,15 | 0,33 | 0,42 |
| Africa | South Africa | Kulula | 8,00 | 0,54 | 5 | 0,00 | 0,27 | 0,34 |
| Asia & Pacific | Indonesia | Indonesia Air Asia | 9,77 | 0,66 | 27 | 0,02 | 0,34 | 0,42 |
| Africa | South Africa | Mango | 2,63 | 0,18 | 9 | 0,01 | 0,09 | 0,11 |
| Africa | Kenya | Jambojet | 0,00 | 0,00 | 0 | 0,00 | 0,00 | 0,00 |
| Africa | South Africa | Fastjet | 1,90 | 0,13 | 12 | 0,01 | 0,07 | 0,09 |

| CONTINENT | COUNTRY | NAME | CONNECTIVITY 2017/18 | | | | | |
|---------------------------|--------------|--------------------|--|------|----------------|------|--------------------|------|
| | | | Network density (departures per airport per day) | | Routes offered | | Connectivity Total | |
| Europe | Ireland | Ryanair | 9,30 | 0,68 | 1626 | 1,00 | 0,84 | 1,00 |
| Latin America & Caribbean | Brazil | GOL | 13,59 | 1,00 | 229 | 0,14 | 0,57 | 0,68 |
| Asia & Pacific | Indonesia | Citilink | 9,88 | 0,73 | 70 | 0,04 | 0,38 | 0,46 |
| Latin America & Caribbean | Brazil | Azul | 7,68 | 0,57 | 245 | 0,15 | 0,36 | 0,43 |
| Africa | South Africa | Kulula | 8,17 | 0,60 | 7 | 0,00 | 0,30 | 0,36 |
| Asia & Pacific | Indonesia | Indonesia Air Asia | 7,25 | 0,53 | 27 | 0,02 | 0,28 | 0,33 |
| Africa | South Africa | Mango | 6,06 | 0,45 | 9 | 0,01 | 0,23 | 0,27 |
| Africa | Kenya | Jambojet | 3,50 | 0,26 | 6 | 0,00 | 0,13 | 0,16 |
| Africa | South Africa | Fastjet | 1,88 | 0,14 | 7 | 0,00 | 0,07 | 0,08 |

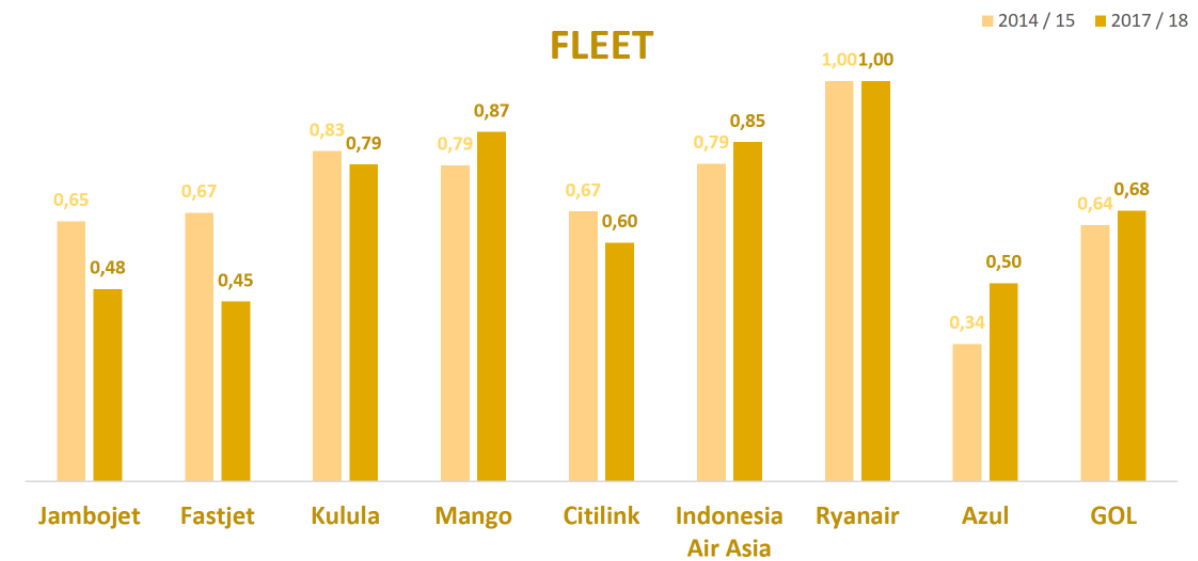
FIGURE 12 | Research findings for the dimension ‘Connectivity’ (Flightstats, 2019; OAG, 2019; Jambojet, 2019; Kenya Airways, 2015; 2017; Fastjet, 2019b; 2016; 2018; 2019a; Kulula, 2019; Comair, 2015; 2017; 2018; FlyMango, 2019; South African Airways, 2016; 2018; Citilink, 2019; 2018; Garuda Indonesia, 2015; AirAsia, 2019b; 2015; 2018, 2019a; Ryanair, 2019; 2015; 2016; 2018; Azul, 2019; 2017; 2018a; 2018b; 2018c; 2018d; Gol, 2019; 2015a; 2015b; 2015c; 2018a; 2018b; 2018c)

Looking at the respective benchmarking metrics gives a deeper insight into what the main rationale for Ryanair's dominance in terms of connectivity is: its sheer astonishing number of routes. In no other KPI of this examination a 'best in class' outshined its competitors as Ryanair did in terms of number of routes (best highlighted by Figure 14). The difference between Ryanair and Azul and Gol is at both points of study 0.85. At the same time, this metric highlights one of the biggest shortcomings of the African airlines in the sample: whilst the Brazilian airlines are constantly at levels around 0.15 and the two Indonesian carriers score in both cases 0.04 (Citilink) and 0.02 (Indonesia AirAsia) respectively, none of the African LCCs had been able to reach an index value higher than 0.01. Compared to Ryanair's more than 1600 routes, the less than a dozen routes of each African LCC look as if they came from a different universe.

In terms of network density, Gol is 'best in class' at both points of study, with 14.83 and 13.59 departures per airport per day respectively. With index values of 0.46 and 0.73 (Citilink) and 0.66 and 0.53 (Indonesia AirAsia), the Indonesian airlines perform well, but volatile, whereas Ryanair (0.59 and 0.68) and South African LCC Kulula (0.54 and 0.6) as well as Azul (0.52 and 0.57) show a more stable performance. The remainder of the African airlines, Mango, Jambojet, and Fastjet, comprise the bottom of the sample. Yet again the trend is positive for both Mango (from 0.18 to 0.45) and Jambojet (from 0.0/not operational to 0.26), whereas Fastjet remained stagnant at a level below 0.15.

4.1.3. Fleet

The results in terms of fleet, illustrated in Figure 13, show that Sub-Saharan African LCCs can be compatible in certain areas. Whereas Ryanair leads in this dimension, too, the South African airlines Kulula and Mango follow relatively close behind, with index values of 0.79 and above. At both points of study, the gap between Ryanair and the South African competition lies at merely 0.17 (2014/15 to Kulula; 2017/18 to Mango) – thus, in no other dimension the African airlines are so similar to Ryanair. Nonetheless, for the other two African carriers the results in the fleet dimension are more mixed; with index scores of 0.67 (Fastjet) and 0.65 (Jambojet) they perform above both Brazilian LCCs in 2014/15, but this is not the case for 2017/18, where they comprise the bottom of the sample with index values of 0.45 and 0.48 respectively.



| CONTINENT | COUNTRY | NAME | FLEET 2014/15 | | | | | | | | | |
|---------------------------|--------------|--------------------|--------------------------------------|------|--|------|----------------------------------|------|---------------------------------|------|-------------|------|
| | | | Aircraft utilisation (hours per day) | | Most populous aircraft type (of total fleet) | | Unit revenue per airplane (mEUR) | | Unit profit per airplane (mEUR) | | Fleet Total | |
| Europe | Ireland | Ryanair | 19,03 | 1,00 | 1,00 | 1,00 | 18,66 | 0,62 | 3,44 | 1,00 | 0,96 | 1,00 |
| Africa | South Africa | Mango | | | 0,89 | 0,89 | 30,30 | 1,00 | -2,60 | 0,00 | 0,76 | 0,79 |
| Asia & Pacific | Indonesia | Indonesia Air Asia | | | 1,00 | 1,00 | 7,46 | 0,25 | 1,14 | 0,33 | 0,76 | 0,79 |
| Africa | South Africa | Kulula | | | 0,90 | 0,90 | 16,77 | 0,55 | 2,09 | 0,61 | 0,79 | 0,83 |
| Latin America & Caribbean | Brazil | GOL | 11,50 | 0,60 | 0,75 | 0,75 | 22,56 | 0,74 | -1,90 | 0,00 | 0,62 | 0,64 |
| Asia & Pacific | Indonesia | Citilink | 10,07 | 0,53 | 1,00 | 1,00 | 11,17 | 0,37 | -0,35 | 0,00 | 0,65 | 0,67 |
| Latin America & Caribbean | Brazil | Azul | | | 0,40 | 0,40 | 11,06 | 0,37 | 0,05 | 0,01 | 0,33 | 0,34 |
| Africa | Kenya | Jambojet | | | 0,75 | 0,75 | 22,71 | 0,75 | -0,59 | 0,00 | 0,62 | 0,65 |
| Africa | South Africa | Fastjet | 9,90 | 0,52 | 1,00 | 1,00 | 11,20 | 0,37 | -9,15 | 0,00 | 0,65 | 0,67 |

| CONTINENT | COUNTRY | NAME | FLEET 2017/18 | | | | | | | | | |
|---------------------------|--------------|--------------------|--------------------------------------|------|--|------|----------------------------------|------|---------------------------------|------|-------------|------|
| | | | Aircraft utilisation (hours per day) | | Most populous aircraft type (of total fleet) | | Unit revenue per airplane (mEUR) | | Unit profit per airplane (mEUR) | | Fleet Total | |
| Europe | Ireland | Ryanair | 19,13 | 1,00 | 1,00 | 1,00 | 17,31 | 0,55 | 4,04 | 1,00 | 0,95 | 1,00 |
| Africa | South Africa | Mango | | | 1,00 | 1,00 | 31,59 | 1,00 | -3,07 | 0,00 | 0,83 | 0,87 |
| Asia & Pacific | Indonesia | Indonesia Air Asia | | | 1,00 | 1,00 | 9,86 | 0,31 | 2,19 | 0,54 | 0,81 | 0,85 |
| Africa | South Africa | Kulula | | | 0,82 | 0,82 | 16,98 | 0,54 | 2,92 | 0,72 | 0,76 | 0,79 |
| Latin America & Caribbean | Brazil | GOL | 12,40 | 0,65 | 0,77 | 0,77 | 24,44 | 0,77 | -4,03 | 0,00 | 0,65 | 0,68 |
| Asia & Pacific | Indonesia | Citilink | 8,50 | 0,44 | 0,90 | 0,90 | 10,02 | 0,32 | -0,79 | 0,00 | 0,57 | 0,60 |
| Latin America & Caribbean | Brazil | Azul | | | 0,48 | 0,48 | 15,92 | 0,50 | 1,73 | 0,43 | 0,47 | 0,50 |
| Africa | Kenya | Jambojet | | | 0,50 | 0,50 | 22,25 | 0,70 | 0,20 | 0,05 | 0,46 | 0,48 |
| Africa | South Africa | Fastjet | 8,67 | 0,45 | 0,60 | 0,60 | 2,40 | 0,08 | -2,21 | 0,00 | 0,43 | 0,45 |

FIGURE 13 | Research findings for the dimension ‘Fleet’ (Planespotters, 2019; Jambojet, 2019; Kenya Airways, 2015; 2017; Fastjet, 2019b; 2016; 2018; 2019a; Kulula, 2019; Comair, 2015; 2017; 2018; FlyMango, 2019; South African Airways, 2016; 2018; Citilink, 2019; 2018; Garuda Indonesia, 2015; AirAsia, 2019b; 2015; 2018, 2019a; Ryanair, 2019; 2015; 2016; 2018; Azul, 2019; 2017; 2018a; 2018b; 2018c; 2018d; Gol, 2019; 2015a; 2015b; 2015c; 2018a; 2018b; 2018c)³⁶

³⁶ Following Bowen’s (2019, p.27) distinction between clean sheet design, variant and derivative, ‘aircraft type’ has been treated as variant (therefore, different derivatives could belong to one aircraft type).

Besides Ryanair, Kulula and Mango, Indonesia AirAsia seems the most consistent airline in the fleet dimension, reaching index values of 0.79 and 0.85 respectively. With values of 0.67 and 0.6, the second Indonesian LCC Citilink lies close to the sample average at both points of study. The two Brazilian airlines Gol (0.64 and 0.68) and Azul (0.34 and 0.5) perform poorly on the fleet dimension, but improved throughout the period of examination. The aircraft utilisation metric could only be examined for the four airlines Ryanair, Gol, Citilink and Fastjet. Together with Citilink, South African LCC Fastjet lies at the bottom, with the aircraft utilisation deteriorating from 9.9 to 8.67 hours per day between 2014/15 and 2017/18 (Citilink's utilisation decreased, too). On the other hand both Ryanair (from 19.03 to 19.13) and Gol (from 11.5 to 12.4) could improve their utilisation time over the years and with index gaps to Gol of 0.4 and 0.35 respectively, Ryanair outshines its competitors on this KPI once again.

In terms of the share of the most populous aircraft type of the whole fleet, the two established South African low cost airlines Mango (89% and 100%) and Kulula (90% and 82%) show classical patterns of an LCC business model. This cannot be said about Fastjet and Jambojet who both have a relatively standardised fleet in 2014/15 (100% and 75%), but not in 2017/18 (60% and 50%). With the exception of the latter two and Brazilian airline Azul, which shows patterns unusual for an LCC (consistently below 50%), all sampled airlines had at least 75% of their fleet from one aircraft. A one-type fleet could be observed for Ryanair, Indonesia AirAsia (both points of study), Citilink, Fastjet (2014/15), and Mango (2017/18).

With regards to the supporting KPI revenue per airplane, it is notable that Mango (index values of 1 and 1) and Jambojet (0.75 and 0.7) are on top of the sample. With a unit revenue of around EUR 18m at both points of study, Ryanair lags far behind Mango with more than EUR 30m (Ryanair has index values of 0.62 and 0.55 compared to Mango). Whereas Gol (index values of around 0.75) performs relatively well, too, the remainder of the airlines has a lower unit revenue than Ryanair at both points of study. Kulula follows Ryanair closely with a stable index value of about 0.55, whereas Azul, Citilink, Indonesia AirAsia and Fastjet comprise the bottom of the sample with index values of 0.5 and lower. African LCC Fastjet has the most negative development, with its unit revenue shrinking from EUR 11.2m to 2.4m between 2014/15 and 2017/18.

The second supporting KPI unit profit per airplane expresses disparities amongst the airlines; on the one hand Ryanair made unit profits of EUR 3.44m and 4.04m, on the other hand four airlines were lossmaking throughout (Fastjet, Mango, Citilink and Gol³⁷). The other two African LCCs showed different results: whilst Jambojet turned the tables and converted a loss into a small profit and consequently obtained an index value of 0.05 in 2017/18, Kulula was the highest-performing airline after Ryanair, with values of 0.61 and 0.72 respectively. Indonesia AirAsia and Azul were profitable at both points of study, but did not obtain a unit profit comparable to Ryanair and Kulula.

4.1.4. Overall

The overall findings of the Cost-connectivity-fleet Analysis are summarised and illustrated by Figure 14 and 15. Generally it can be said that, as expected, in most metrics Ryanair indeed is the 'best in class'; in four out of seven to be precise. Looking at dimensions, the Irish LCC is on top of the sample in two out of three cases – in terms of connectivity and fleet, but not in terms of costs. Amongst the sample, Indonesia AirAsia seems to come closest, and is ahead of Ryanair in the cost dimension and in range in terms of fleet. However, when it comes to connectivity it is far behind Ryanair and some other airlines (see Figure 14).

With regards to the African airlines in the sample, it is apparent that, except for the fleet dimension in 2014/15, it is always an African LCC that is at the bottom of the sample (in 2017/18 this is Fastjet in all three dimensions). Nonetheless, the disparity amongst the sampled airlines from Sub-Saharan Africa is quite wide, and especially Kulula performs quite stable with few negative exceptions (lowest index value on any dimension: 0.34). Looking at the different dimensions (see Figure 15), it is visible that African airlines seem to perform quite similar to a classical LCC such as Ryanair in terms of fleet, where most African carriers are in the top area of the sample. In terms of costs they perform behind Ryanair and the Asian LCCs on a similar level as the South American airlines, whereas African LCCs are at the bottom of the sample when it comes to connectivity. The same pattern holds when looking at the index values for each airline: for connectivity, the highest index value of an African LCC is 0.36, for costs 0.65 and for fleet 0.87.

³⁷ As the scalation reached from 0.00 to 1.00, any loss resulted in an index value of 0.00.

Figure 15 highlights quite accurately that, while Ryanair performs like a 'classical LCC' in all three dimensions, carriers of each region tend to trace similar patterns. The two Asian airlines in the sample seem to be more like Ryanair in terms of costs and, to a slightly lesser extent, fleet, but not at all in terms of connectivity where their index values of below 0.5 clearly lag behind Ryanair and Brazilian carrier Gol. Except for the connectivity dimension, Indonesia AirAsia is consistently closer to Ryanair than Citilink.

The Latin American airlines in the sample, which happen to both be Brazilian, behave differently: their cost structure resembles the one of most African airlines, with index values lower than that of Ryanair and the Indonesian airlines. In terms of fleet one airline, Azul is at the bottom of the sample whereas Gol's index values of below 0.7 are also quite atypical for a classical LCC. However, when it comes to connectivity, especially Gol does not come very close to Ryanair, but is clearly ahead of the remainder of the sample. Azul is on a different level, but follows alongside the Indonesian airlines.

In summary it can be said that, after analysing the findings of the Cost-connectivity-fleet Analysis, no 'clear-cut' groups of LCCs can be derived. After all, Ryanair still seems to be the most typical LCC amongst the sampled airlines, but the fact that it is not leading in all three dimensions highlights that the difference to the LCCs from emerging markets might in the end not be as big as expected. While the result clearly highlights that certain airlines such as Fastjet and, to a lesser extent, Azul, are not structured as classical LCCs at all and therefore lag behind a bit, no regional group 'lags behind' universally. Instead, it can be concluded that each region's cluster seems to have its very own peculiarities – Asian LCCs put their focus on cost-efficiency, African LCCs have relatively efficient fleets, and Latin American LCCs have a network structure that most adequately resembles a classical low-cost airline such as Ryanair.

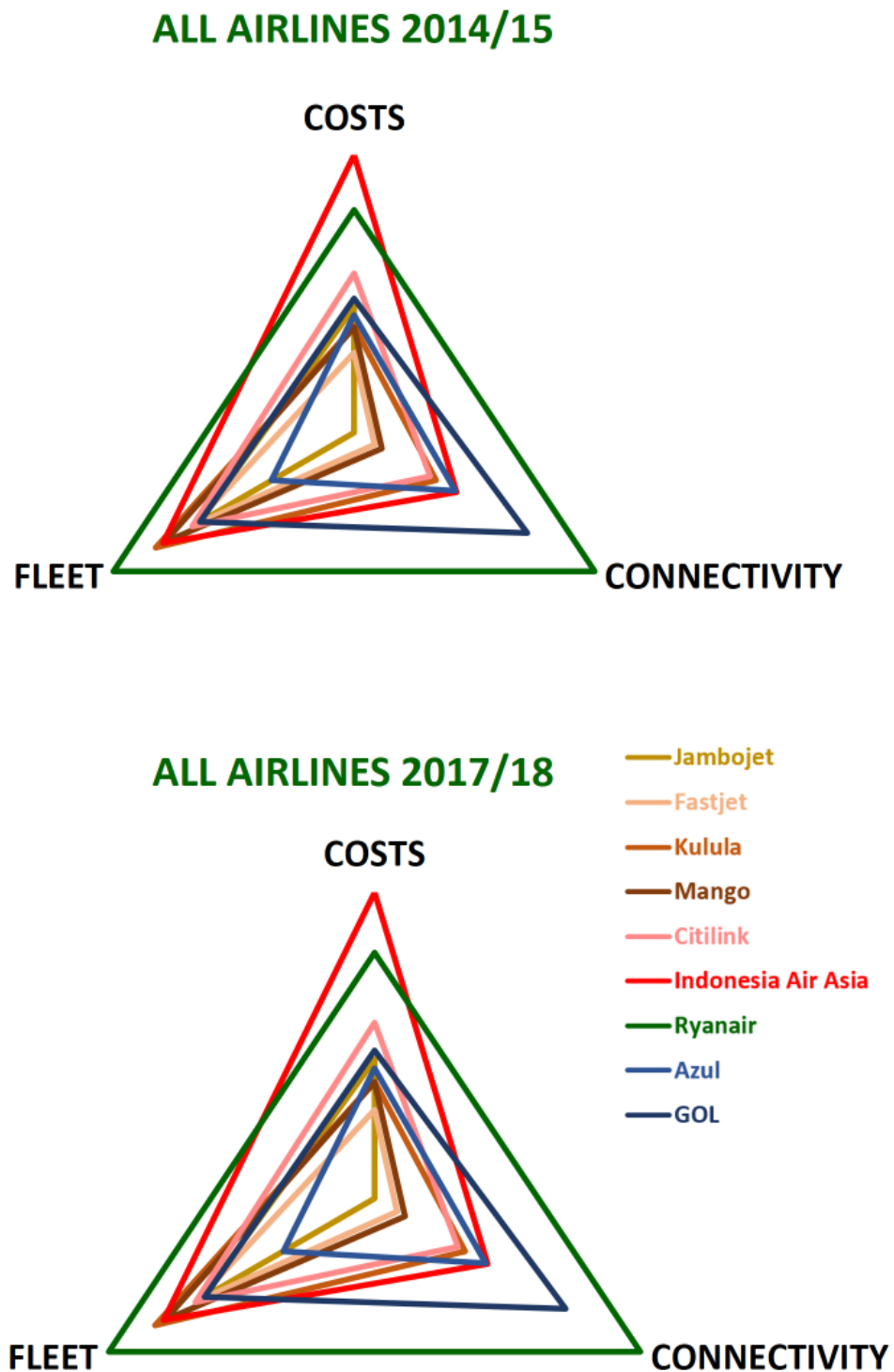
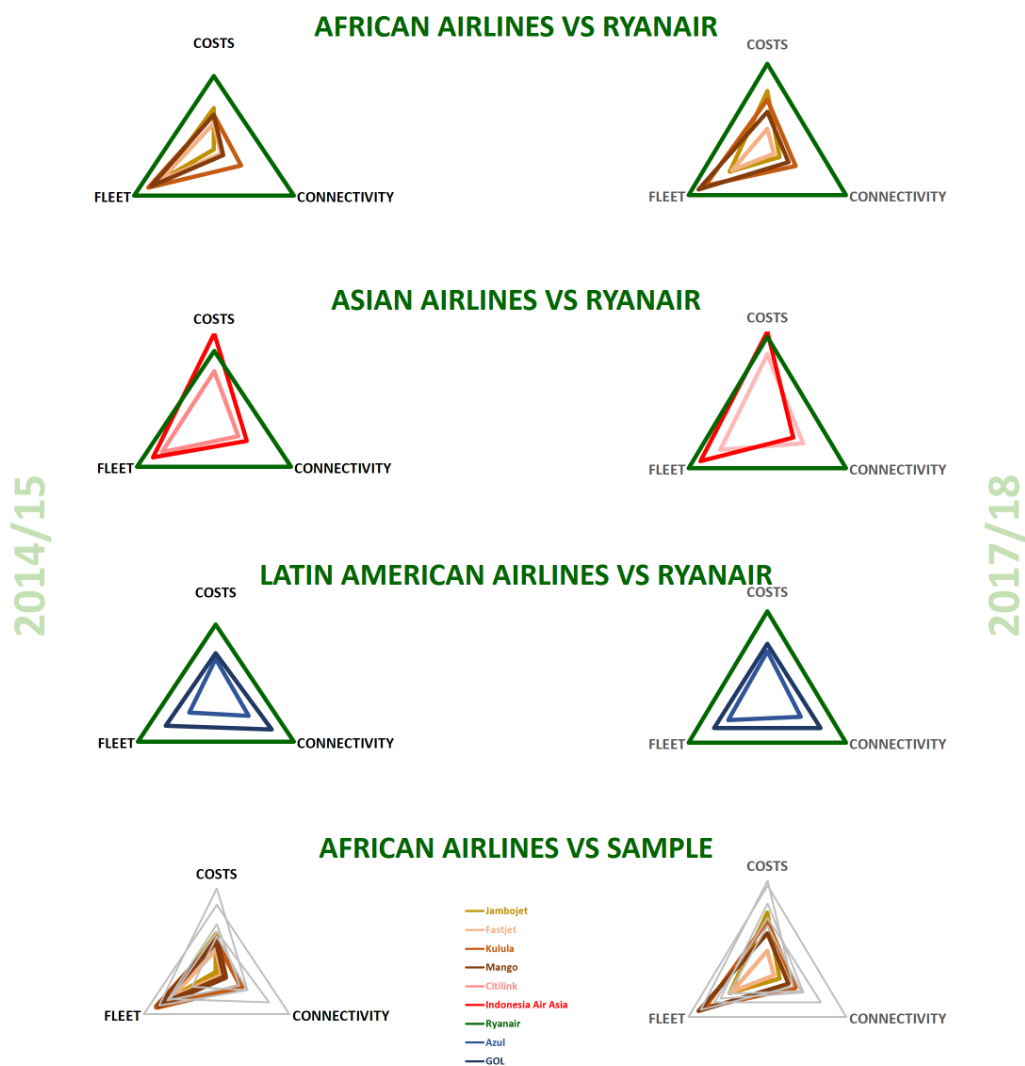


FIGURE 14 | Overall research findings I (Sources indicated at Figure 11-13)



| | | | 2014 / 2015 | | | | | | | | | |
|---------------------------|--------------|--------------------|-------------------|-------------|-----------------|----------------|--------------------|----------------------|-----------------------------|---------------------------|--------------------------|-------------|
| | | | COSTS | | CONNECTIVITY | | | FLEET | | | | |
| CONTINENT | COUNTRY | NAME | Unit cost per ASK | Costs Total | Network density | Routes offered | Connectivity Total | Aircraft utilisation | Most populous aircraft type | Unit revenue per airplane | Unit profit per airplane | Fleet Total |
| | | | 2014 / 15 | 2014 / 15 | 2014 / 15 | 2014 / 15 | 2014 / 15 | 2014 / 15 | 2014 / 15 | 2014 / 15 | 2014 / 15 | 2014 / 15 |
| Africa | Kenya | Jambojet | 0,45 | 0,45 | 0,00 | 0,00 | 0,00 | | 0,75 | 0,75 | 0,00 | 0,65 |
| Africa | South Africa | Fastjet | 0,29 | 0,29 | 0,13 | 0,01 | 0,09 | 0,52 | 1,00 | 0,37 | 0,00 | 0,67 |
| Africa | South Africa | Kulula | 0,38 | 0,38 | 0,54 | 0,00 | 0,34 | | 0,90 | 0,55 | 0,61 | 0,83 |
| Africa | South Africa | Mango | 0,38 | 0,38 | 0,18 | 0,01 | 0,11 | | 0,89 | 1,00 | 0,00 | 0,79 |
| Asia & Pacific | Indonesia | Citilink | 0,57 | 0,57 | 0,46 | 0,04 | 0,31 | 0,53 | 1,00 | 0,37 | 0,00 | 0,67 |
| Asia & Pacific | Indonesia | Indonesia Air Asia | 1,00 | 1,00 | 0,66 | 0,02 | 0,42 | | 1,00 | 0,25 | 0,33 | 0,79 |
| Europe | Ireland | Ryanair | 0,80 | 0,80 | 0,59 | 1,00 | 1,00 | 1,00 | 1,00 | 0,62 | 1,00 | 1,00 |
| Latin America & Caribbean | Brazil | Azul | 0,43 | 0,43 | 0,52 | 0,15 | 0,42 | | 0,40 | 0,37 | 0,01 | 0,34 |
| Latin America & Caribbean | Brazil | GOL | 0,48 | 0,48 | 1,00 | 0,15 | 0,72 | 0,60 | 0,75 | 0,74 | 0,00 | 0,64 |

| | | | 2017 / 2018 | | | | | | | | | |
|---------------------------|--------------|--------------------|-------------------|-------------|-----------------|----------------|--------------------|----------------------|-----------------------------|---------------------------|--------------------------|-------------|
| | | | COSTS | | CONNECTIVITY | | | FLEET | | | | |
| CONTINENT | COUNTRY | NAME | Unit cost per ASK | Costs Total | Network density | Routes offered | Connectivity Total | Aircraft utilisation | Most populous aircraft type | Unit revenue per airplane | Unit profit per airplane | Fleet Total |
| | | | 2017 / 18 | 2017 / 18 | 2017 / 18 | 2017 / 18 | 2017 / 18 | 2017 / 18 | 2017 / 18 | 2017 / 18 | 2017 / 18 | 2017 / 18 |
| Africa | Kenya | Jambojet | 0,65 | 0,65 | 0,26 | 0,00 | 0,16 | | 0,50 | 0,70 | 0,05 | 0,48 |
| Africa | South Africa | Fastjet | 0,23 | 0,23 | 0,14 | 0,00 | 0,08 | 0,45 | 0,60 | 0,08 | 0,00 | 0,45 |
| Africa | South Africa | Kulula | 0,56 | 0,56 | 0,60 | 0,00 | 0,36 | | 0,82 | 0,54 | 0,72 | 0,79 |
| Africa | South Africa | Mango | 0,42 | 0,42 | 0,45 | 0,01 | 0,27 | | 1,00 | 1,00 | 0,00 | 0,87 |
| Asia & Pacific | Indonesia | Citilink | 0,75 | 0,75 | 0,73 | 0,04 | 0,46 | 0,44 | 0,90 | 0,32 | 0,00 | 0,60 |
| Asia & Pacific | Indonesia | Indonesia Air Asia | 1,00 | 1,00 | 0,53 | 0,02 | 0,33 | | 1,00 | 0,31 | 0,54 | 0,85 |
| Europe | Ireland | Ryanair | 0,95 | 0,95 | 0,68 | 1,00 | 1,00 | 1,00 | 1,00 | 0,55 | 1,00 | 1,00 |
| Latin America & Caribbean | Brazil | Azul | 0,51 | 0,51 | 0,57 | 0,15 | 0,43 | | 0,48 | 0,50 | 0,43 | 0,50 |
| Latin America & Caribbean | Brazil | GOL | 0,59 | 0,59 | 1,00 | 0,14 | 0,68 | 0,65 | 0,77 | 0,77 | 0,00 | 0,68 |

FIGURE 15 | Overall research findings II (Sources indicated at Figure 11-13)

4.2 Additional explanations to findings

This section takes a second, less descriptive and more interpretative look at the findings of the Cost-connectivity-fleet Analysis and scrutinises them. This includes establishing possible rationales for the outcome of the examination and looking at additional qualitative sources in order to reach meaningful conclusions that mount into those ramifications the next section discusses.

4.2.1. Costs

As pointed out in Chapter 2, the cost structure is the most important cornerstone of a typical LCC business model. Interestingly enough, it is not the classical LCC Ryanair that leads in this regard, but Indonesia AirAsia, an Indonesian subsidiary of the AirAsia group. Nonetheless, this is mostly due to environmental factors such as airport charges, labour costs and fuel costs (Fickling, 2018), which can only be improved to a certain extent by the airlines themselves only up to a certain point. At the same time, AirAsia is facing certain environmental disadvantages as well, for example relatively fierce government regulation. The airline tried to contain the operational potential lost through this by creating individual national subsidiaries – such as, for example, Indonesia AirAsia (Jeddi et al., 2013, p.655).

What does this mean for the cost performance of the four airlines of Sub-Saharan Africa in the sample of this study? It is striking that the lowest-performing of these airlines is arguably the most ‘international’ airline Fastjet. While Kulula and Mango almost exclusively operate in South Africa, and Jambojet has a strong operational focus on its base country Kenya, Fastjet followed a concept inspired by European LCCs such as Easyjet and Ryanair of creating a network that crosses countries’ borders. Throughout the observation period, the carrier had been active in South Africa, Zimbabwe, Mozambique, Tanzania, Kenya, Uganda and Zambia. Within these seven countries, Fastjet operated merely 16 destinations. None of the LCCs in this study has any similar ratio of destinations to countries of operation. This might arguably be one of the reasons why Fastjet seems to be in an enduring state of reorganisation, with frequent changes in its network and route structure (Fastjet, 2018).

The example of AirAsia shows that government regulation is a very substantial barrier to successful LCC operations, and Chapter 2 of this paper describes that this is particularly relevant for Sub-Saharan Africa. Having said that, regulation is by no means the only cost-

driver, as there are also costs related to labour, aircraft and fuel, infrastructure, product and distribution, as well as seating density.³⁸ Nonetheless, with their focus on serving mostly high-frequented, domestic routes that are not subject to cross-border tariffs and regulation, Kulula and Jambojet manage to be especially cost-compatible at least with the Brazilian airlines Gol and Azul. Moreover, the fact that Kulula, Mango and Jambojet could improve their cost structure over the years even while growing is to be seen very positively.

4.2.2. Connectivity

Yes, the four African airlines are, with the exception of Kulula, at the bottom of the connectivity dimension matrix. However, key takeaway for the connectivity results is that size matters in this regard. And, looking at the number of routes offered alone, it is just a fact that Ryanair, AirAsia³⁹ and the Brazilian carriers operate on a different scale than Fastjet, Jambojet, Kulula, Mango and the Indonesian Citilink. In order to become more like a typical LCC, the African carriers would have to scale up their operations significantly. Economics of scale usually come along with efficiency gains, this makes the equation quite simple.

A somewhat related, but intrinsically different issue is that in terms of network density Mango, Jambojet and Fastjet in particular seem to lag behind. On the one hand, it is simple maths that an airline with three airports for example, which potentially could be connected through three routes has certain limits to the metric departures per airport per day compared to an airline such as Ryanair with more than 1600 routes.

On the other hand, airlines with a small route network can also reach a relatively high route density nonetheless. As discussed in previous chapters, route density is relatively important to an LCC business model as it unlocks potential efficiency gains, in terms of airport charges for example. Interestingly, while Kulula and Mango serve mostly the same South African destinations, their network density varies as much as 67% in 2014/15. This is a hint that efficiency gains on this component should be both feasible and necessary.

³⁸ For a more detailed discussion on the cost structure of LCCs, please view subsection 2.1.3.

³⁹ Taking the entire AirAsia group as a point of reference

4.2.3. Fleet

At least two out of the four LCCs from Sub-Saharan Africa seem to be compatible with a classical low-cost carrier such as Ryanair. Kulula and Mango seem to utilise the limited resources they have well and achieve a high efficiency when it comes to their planes. Cornerstone of their success in this dimension is that at both points of study the carriers stuck to one airplane type that made up at least an 80% share of their fleets – the Boeing 737 Next Generation (Kulula, 2019; Mango Airlines, 2019).

However, the other two African carriers did not perform as well on the fleet dimension. While Jambojet's most populous aircraft type plummeted to 50% in 2017/18, Fastjet initially had an all- Airbus A319 fleet, but was in 2017/18 in the process of changing to smaller Embraer E190s. The fact that the airline was in a restructuring process explains its poor performance on this metric (Hill, 2016). Nonetheless: at both points of study Fastjet had about half the fleet utilisation of Ryanair, another key metric.

Generally it can be said that with shares of the most populous aircraft type of constantly below 0.5 (Azul) and 0.8 (Gol), the two South American airlines do not possess a fleet structured like the one of a 'true' LCC carrier. Particularly Azul seems to be the odd one out of all sampled airlines in this metric. Some observers such as Bowen (2019, p.85) question whether the airline could still label itself as an LCC legitimately, partly because due to its long-haul flights to the US, the airline needed to complement its Embraer fleet with other airplane types such as Airbus widebodies. Amongst the Asian airlines, Indonesia AirAsia seems to have a similarly typical LCC fleet as Ryanair, Kulula and Mango, while Citilink slightly lags behind in this dimension.

4.2.4. Final considerations

Key takeaway of the research findings of the Cost-connectivity-fleet Analysis is that particularly South African airline Kulula seemed, in some regards, to fit quite neatly into the Image of a classical low-cost carrier. It can similarly be said with some limitations about local competitor Mango and Kenyan Airways subsidiary Jambojet. Fastjet on the other hand seems to face a substantial process of restructuring with an unknown final outcome. Even when leaving the airlines' performances on the different dimensions out of the picture, an eye-

catching observation is that the one airline of those four only operating in one country seems to be the most efficient in LCC terms. On the other side of the spectrum there is Fastjet, an airline with a management who believed that Ryanair's international structure could be applied 1:1 on the African continent. As mentioned above, throughout the operation period, Fastjet operated in seven different countries.

Another takeaway is that the small scale at which the Sub-Saharan African carriers operate at the moment seems to convey advantages as well as disadvantages. On the one hand, the small fleets and small networks seem to work in favour of these airlines on the fleet and cost dimension as they have a possible effect of efficiency and cost KPIs, which are particularly important for LCC. The flipside is that connectivity of African carriers remains limited compared to all other airlines in the sample.

It is hard to tell whether the management of the sampled airlines should always take Ryanair and the classical LCC metrics as their 'Gold standard'. In fact, this paper revealed the regional differences of the sampled carrier- Asian airlines set benchmarks in terms of costs, South American ones in terms of connectivity, and African ones in terms of fleet. An airline such as Azul operates in a country with a less established FSNC structure and connects cities like Belo Horizonte or Campinas in an unprecedented way. In some areas its environment makes it prone to exercise basic airline functions that go beyond a classic LCC (Bowen, 2019, p.85). In some cases it might be useful to learn from Ryanair or successful LCCs from other regions, but in others regional peculiarities could just be difficult to be changed in the short- and medium term. The next sections follows this discussion with regards to the African airlines.

4.3 Ramifications for Sub-Saharan African LCCs

What do these findings entail for Sub-Saharan African LCCs? This section seeks to transform the key takeaways of the study to suggestions for improvement for airlines of the likes of Fastjet, Jambojet, Kulula and Mango. However, giving these suggestions is like walking a tightrope as the question remains whether the entirely cost-driven Ryanair model is even desirable. Therefore, the third subsection will look at those areas in which the African part of the sample deviate from Ryanair, but in which it might be undesirable or even impossible to follow their lead.

4.3.1. Areas of similarity

When talking about areas of similarity between those four airlines and Ryanair, fleet is the one dimension to be talked about. The results of South African LCCs Kulula and Mango lie in proximity to Ryanair's. They seem to be on track in terms of airplane efficiency and fleet structure and are an example that Sub-Saharan African airlines can potentially be compatible with Ryanair on this dimension. Whereas Fastjet is in the above-mentioned process of restructuring, since the second point of study Jambojet has given away its Boeing 737 aircrafts and now relies on an exclusively all-Bombardier fleet now. Given their comparable small networks fewer routes, fleet efficiency is arguably the one dimension in which African airlines can generate relatively 'easy' success. As networks will grow over the years what will be important for them is to choose wisely the aircraft type they want to rely on as the availability of some models might be exhaustible.

4.3.2. Areas that could be changed/improved

As the examination has highlighted, Sub-Saharan African LCCs lag behind Ryanair quite a bit in terms of cost-efficiency, particularly Fastjet. Whilst there are some cost areas where there is only limited room to manoeuvre for them, they could cut costs most easily by (1) Improving their seating density, (2) having a lean, but modern distribution system, and (3) choosing routes where regulation is low. Firstly, while there is no specific data for the LCC sector, according to the Economist (2019, p.30) African planes are flying with the highest share of empty seats amongst all regions of the world. More demand-focused operations with smart marketing structures and booking software will be required to remedy this.

Secondly, talking about booking software, the airlines' sales systems need to be on an extremely high standard to be compatible as an LCC. This includes the mentioned focus on internet sales with few offices, but customer-centred call centres. The South African airlines Kulula and Mango have made good strides in this regard, having been able to create very innovative cooperation with supermarkets such as Shoprite and Checkers where they sell their tickets at special counters. Fastjet has joined this cooperation in early 2018 (ATC News, 2018). Lastly, as the negative example of Fastjet shows, going international might not always be the wisest option in the African context. While in terms of value added connecting cities from different countries seems most desirable, cross-border regulation and taxes turn out to be

amongst the heaviest cost factors. This is something the other African airlines should consider when carrying out an international expansion such as the one Jambojet is planning at the moment (Bewicke, 2019).⁴⁰

4.3.3. Areas that should be looked at differently

In contrast to the mentioned potential on the cost dimension, there are also cost drivers where there is not much potential for growth of Sub-Saharan African LCCs, namely regulation and airport charges. As explained in Chapter 2, Africa remains the world region with highest regulation and cross-border taxes. As long as the single African aviation market remains a paper tiger, African LCCs offering cross-border flights will inevitably be crippled with higher operating expenses than Ryanair. Moreover, the fact that secondary airports are extremely scarce in Sub-Saharan Africa will make it very difficult to reduce airport-related cost drivers.

An area where on paper it might be easy to get an advantage over a European contender such as Ryanair might be labour-related costs, but this area bears ethical concerns. Undoubtedly, it is one of AirAsia's secrets for cost leadership ahead of Ryanair to be able to pay lower wages given the market the airline operates in. Nevertheless, it has to be born in mind that Ryanair is already subject to considerable criticism for its questionable labour practices and remuneration and therefore AirAsia's cost leadership should be looked at with a grain of salt. For African LCCs this means that efficiency gains in the labour area should not come at an expense for ethical management practices.

However, at first glance not only the cost dimension seems to offer potential efficiency gains, the connectivity dimension where the four African LCCs performed poorly, seems to do so too. Nonetheless, as discussed in previous subsections, connectivity is prone to both economies of scale and economies of density. Especially during the type of beginning stage in which all four African LCCs still seem to be in, it seems difficult to reach a maximum connectivity ratio without having attained a certain size. As long as Kulula, for example, still operates only in the South African domestic market, it will arguably be difficult to reach higher values in terms of departures per airport per day and, especially, number of routes.

⁴⁰ In 2016, the Kenya Civil Aviation Authority gave the airline regulatory approval to being allowed to offer flights to Addis Ababa, Dar es Salaam, Juba, Kigali, Mogadishu and Zanzibar.

Lastly, as briefly broached in Chapter 3, in times of climate change the question remains to what extent the socio-economic benefits of aviation outweigh its detrimental effects on the environment. It is going to be a central challenge of the coming years for politicians from all around the globe to pursue policies supporting development of on-ground-infrastructure, especially in many regions of Sub-Saharan Africa, while regulating air traffic in a way that it can still meet necessary demand structures where no on-ground infrastructure is available, but that it does not create unnecessary competition for example high-speed railway systems. As explained in Chapter 2, LCCs such as Ryanair increasingly get criticised for the fact that their fares often are lower than the ones of on-ground alternatives and that it therefore incentivises people to choose an environmentally more harmful mode of transportation.

It reaches far beyond this dissertation to discuss the ‘sweet spot’ between development in emerging markets and serving the transportation needs of the people in those countries and the least possible level of CO₂ emissions. What can be generally said about the African continent is that, as Chapter 2 has indicated, air transportation often meets basic demands that on-ground transportation fails to do so. A bus ride between Cape Town and Johannesburg takes around 20 hours, therefore it is questionable if a manager would use a different mode of transport even if LCCs would not serve that route. However, if there would be a high-speed train this question would have to be looked at differently. To put it in a nutshell, in the African context LCC expansion still seems to *serve* existing demand, rather than *create* new. Nonetheless, should this change one day, they should be wary of not following the likes of Ryanair and start price wars.

4.4. Conclusions for the analysis

After examining the research question ‘Are African low-cost operators on the trail of Ryanair? How is their business model structured with regards to costs, connectivity, and fleet structure?’, in summary it can be said that while low cost-carriers such as Kulula are in a range of compatibility to Ryanair in some of the traditional metrics and most African airlines are comparable to a classical LCC in terms of fleet structure, but not costs and connectivity, the disparity amongst the sampled airline from Sub-Saharan Africa is quite wide. Despite this disparity, patterns and tendencies seem to be quite consistent for the majority of African

airlines in the sample. In consequence, one could indeed call this a peculiar 'African LCC business model'.

It seems to be both unrealistic and undesirable to apply Ryanair's business model on Africa without paying attention to both regional peculiarities such as high-levels of cross-border regulation, a different airport structure as well as limits in terms of demand and Ryanair's environmental and ethical shortcomings. The fact that most of the African airlines still operate on a limited scale could be partly seen as a potential rather than an obstacle. Yes, the African LCCs can learn from Ryanair – not only from its successes, but also from its inadequacies.

Beyond the multi-angled comparative study provided here, future research should continue where this study left off and look at the other dimensions of an LCC business model, namely convenience, comfort, IT, distribution / sales, labour, airports and revenues. For this purpose, more, better and more accessible data sources are needed. Moreover, additional research on demand structure in different parts of the continent, also considering existing and potential future on-ground infrastructure, is necessary.

5 Conclusion and outlook

This final chapter gives a condensed summary of the main findings and their implications for both the actors within the industry and scholars doing future research on the subject matter. The last aspect will be dealt within the outlook section.

5.1 Conclusion

Scrutinising the research question ‘Are African low-cost operators on the trail of Ryanair? How is their business model structured with regards to costs, connectivity, and fleet structure?’, this examination found mixed results. The inspection of low-cost carriers in a slowly emerging regional market such as Sub-Saharan Africa proved to be a challenging task as public data about the aviation industry seems to be mostly limited to traditional markets and not in all countries are large companies required to publish annual reports and financials. Nevertheless, this paper managed to examine nine airlines from four continents with regards to a total of seven KPIs on three dimensions.

The paper discussed the state and main challenges of LCCs in Sub-Saharan Africa, amongst them the strong presence of non-African airlines on the continent, a relatively small middle class, high cross-border tariffs and regulation, rapid and uneven market shifts, a poor safety record, as well as a weak state of the general infrastructure. Moreover, after an introduction to Business Model Theory, two theoretical concepts, the Business Model Canvas and the Product and Organisational Analysis were merged to create the BMC Architecture framework. This process resulted in a Cost-connectivity-fleet Analysis, assessing the costs, connectivity and fleet structure of the sampled airlines in an index-like examination design.

Key findings of the examination are that whilst the disparity amongst the sampled airlines from Sub-Saharan Africa is quite wide, they seem to follow similar patterns by performing quite similar to classical LCCs such as Ryanair in terms of fleet structure, but not in terms of both costs and connectivity. With regards to costs, they perform behind Ryanair and the Asian LCCs on a similar level as the South American airlines, and when it comes to connectivity, African LCCs are at the bottom of the sample. As these characteristics seem to be quite consistent amongst the majority of African airlines in the sample, one could indeed call this a peculiar ‘African LCC business model’.

Having said that, the paper questions the utility for African LCCs for even being ‘on the trails’ of Ryanair, as the Irish carrier’s business model cannot be blindly applied on a structurally different environment with high-levels of cross-border regulation, a different airport structure as well as limits in terms of demand. Moreover, the limited scale of operations of the African LCCs, which are still in the early stages of development, should be taken into consideration. Lastly, Ryanair’s environmental and ethical shortcomings can impossibly be dismissed, especially during times in which the symptoms of global warming are becoming increasingly evident.

Strategic suggestions for the airlines from Sub-Saharan Africa could include improving their seating density, having a lean, but modern distribution system, and choosing routes where regulatory hurdles are low. The last point includes a slow and organic expansion strategy with picking countries where cross-border regulation and tariffs are comparably low. Unlike in most regions of the world, where it is debatable whether low-cost airlines are serving existing demand or merely capturing potential on-ground demand, in Africa they have the potential to fill gaps that other transportation providers have failed to close before. This makes their existence relevant, yet puts them under pressure to act responsibly for the public good of their societies.

5.2 Outlook for future research

At the same time as this dissertation has presented a multi-angled comparative study of African LCCs of unprecedented nature, throughout the process of writing the limitations of an academic paper investigating the aviation industry beyond Europe and North America became apparent. Even the most central operational KPIs, such as available seat kilometres, were not retrievable in all annual reports and, with the notable exception of the databases used for the analysis, most content is only accessible paying considerable amounts that stretch far beyond the limit of what is justifiable when creating unbiased, non-profit academic content. Therefore, the priority for the research of the Sub-Saharan African aviation industry should be to create an academic, non-profit database such as the MIT’s ‘Data Project’ for North American airlines (MIT, 2019).

Beyond that, another area where research would be desirable is the demand structure in different parts of Sub-Saharan Africa. What it needs is a grand-scale socio-economic cross-country study estimating size and purchasing power of the respective middle classes in countries of observation. Ideally, this study would also include an approximate assessment of existing on-ground infrastructure. This kind of examination would have the potential to reach beyond the aviation industry and could be used as a point of orientation for future grand-scheme on-ground infrastructure projects as well.

As circumscribed in the introductory part of Chapter 2, the coming decade will be the decade of tumbling cross-border regulation, an opening of markets across Africa, and an economic boom in many countries throughout the region. At the same time however, it will be the decade where the world realises how real the threat of global warming and climate change is. Therefore, it is an imperative for international academic institutions, think tanks and research organisations alike to provide countries with this kind of data, in order to make policy makers more aware of structural realities and offer on-ground solutions that might not be as visible at first. Right now the people in charge often don't see the wood for the trees – let us do something about it before there isn't any wood left.

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