

ECONOMIC IMPACTS OF INTERNATIONAL AIR TRANSPORT SERVICE MARKET LIBERALISATION ON THE INTERNATIONAL AIR TRANSPORT SERVICE IN THE EMERGING ECONOMY: A CASE FOR THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC)

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Approval of the Thesis

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Abstract

ECONOMIC IMPACTS OF INTERNATIONAL AIR TRANSPORT SERVICE MARKET LIBERALISATION ON THE INTERNATIONAL AIR TRANSPORT SERVICE IN THE EMERGING ECONOMY: A CASE FOR THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC)

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The purpose of this research study is to establish the significance of the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community, where the topic is relatively under-researched. The study has been prompted by continued poor economic performance of the international air transport service despite some countries experiencing some liberalisation in the SADC. The capitalism economic theory forms the theoretical framework of the research. The research study adopts the secondary data analysis design within the quantitative approach. It works with a population of 49 country-pairs with signed bilateral air service agreements in the SADC. Employing the total population purposive sampling technique, it identifies a total population sample of 38 country-pairs with operational signed bilateral air service agreements from the population. The research study also works with a population of published and non-published electronic secondary data sources, and published and non-published printed secondary data sources from the population.

The findings show up to 62% statistically significant increase in passenger volume in liberal markets compared to restrictive markets. The findings show up to 10 US Cents per kilometer statistically significant reduction in passenger airfare in liberal markets compared to restrictive markets. The findings also show as much as 51% statistically significant increase in passenger departure frequency in liberal markets compared to restrictive markets. The findings show as much as 53% statistically significant increase in revenue passenger load factor in liberal markets compared to restrictive markets. The findings further show up to 62% times statistically significant increase in direct jobs in the T&T industry in liberal markets compared to restrictive markets.

The findings of the research study address the research problem and purpose. The findings imply that further liberalisation of markets can bring additional gains in the SADC. Therefore, the research study recommends full liberalisation through the Yamoussoukro Decision. However, future research should investigate the economic impacts of full liberalisation in the SADC. Knowledge on the economic impacts of liberalisation in the SADC, where the topic is relatively under-researched, contributes to the existing body of knowledge on the topic.

Declaration

I declare that this thesis has been composed solely by me and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where states otherwise by reference or acknowledgment, the work presented is entirely my own.

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I confirm that I retain the intellectual property and copyright of the thesis submitted. I also allow Unicaf University to produce and disseminate the contributions of the thesis in all media forms known or to come as per the Creative Commons BY Licence (CC BY).

Dedication

I dedicate this dissertation to my dad and mum, Chayima and Mseche E. Kanunkha. Dad and mum, I wish you were here with me but I know that you are smiling down from heaven as proud father and mother. Dad and mum, you were always there for me during the early part of my education and always pushed me to excel academically. Words are not enough to express how grateful I am to both of you my parents for instilling in me the significance of education and inspiring me to always put forth my best efforts. All of my accomplishments and the quality of man that I am today are all attributed to having the best father and mother.

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List of Abbreviations

AASA	Airlines Association of Southern Africa
ADA	Airline Deregulation Act
ADG	Airline Data Group
AFCAC	African Civil Aviation Commission
AfDB	African Development Bank
AFRAA	African Airlines Association
AMU	Maghreb Union
ASA	air service agreement
AU	African Union
BASA	bilateral air service agreement
САА	Civil aviation authority
САВ	Civil Aeronautics Board
СЕМАС	Central African Economic and Monetary Community
COMESA	Common Market for Eastern and Southern Africa
COV	Cut-off value
EAC	East African Community
ECOWAS	Economic Community of West African States
EU	European Union
FAA	Federal Aviation Administration
GDP	Gross domestic product
GPS	Global Positioning System
IATA	International Air Transport Association

ICAO	International Civil Aviation Organization
JCA	Joint Competition Authority
LCC	low cost carriers
LED	light emitting diode
OAA	Open Aviation Area
OAG	Official Airline Guide
OECD	Organization for Economic Co-operation and Development
OSA	Open Skies Agreements
REC	Regional Economic Communities
SAATM	Single African Air Transport Market
SADC	Southern Africa Development Community
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
UNWTO	United Nations World Tourism Organization
US	United Stated
US\$	United States Dollar
VIF	Variance inflation factor
WASA	World air service agreement
WTTC	World Travel and Tourism Council
YD	Yamoussoukro Decision

List of Codes of SADC Countries

AGO	Angola
BWA	Botswana
СОД	The Democratic Republic of the Congo
LSO	Lesotho
MDG	Madagascar
MOZ	Mozambique
MUS	Mauritius
MWI	Malawi
NAM	Namibia
SWZ	Swaziland
SYC	Seychelles
TZA	United Republic of Tanzania
ZAF	South Africa
ZMB	Zambia
ZWE	Zimbabwe

List of Codes of Capital City Airports in the SADC

DAR	Dar es Salaam, Tanzania
FIH	Kinshasa, DRC
GBE	Gaborone, Botswana
HRE	Harare, Zimbabwe
JNB	Johannesburg, South Africa
LAD	Luanda, Angola
LLW	Lilongwe, Malawi
LUN	Lusaka, Zambia
MPM	Maputo, Mozambique
MRU	Mauritius, Mauritius
MSU	Maseru, Lesotho
MTS	Manzini, Swaziland
SEZ	Seychelles
TNR	Antananarivo, Madagascar
WDH	Windhoek, Namibia

CHAPTER 1: INTRODUCTION

This research study investigates the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community (SADC). The Southern African Development Community is a regional economic community that was established in 1992 to succeed the Southern African Development Co-ordination Conference (SADCC) established in 1980. The Southern African Development Community was established with the purpose to advance socio-economic, political, and security cooperation among its member states in southern Africa. The SADC is an emerging economy founded and maintained by countries in southern Africa, and its membership currently comprises 16 states including Angola, Botswana, Comoros Islands, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia, and Zimbabwe. The Southern African Development Community endeavours to advocate economic liberalisation, to establish competitive and diversified industrial development, to increase investment, and to collectively eradicate poverty in order to achieve regional integration and economic development (InterVISTAS, 2014; Moyo, 2020; Myburgh et al., 2006; Schlumberger, 2009; Southern African Development Community [SADC], 2018). Typical of an emerging economy, the Southern African Development Community is still characterised by substandard air transport technological infrastructure and underdeveloped air network connectivity. The international air transport service industry is characterised by low standard of growth and development. State-owned international air transport service operations and low standard national airlines still characterise international air transport services in the Southern African Development Community. Some major national airlines in the SADC include the South African Airways, TAAG Angolan Airlines, LAM

Mozambican Airlines, Air Namibia, Air Zimbabwe, Air Botswana, Air Tanzania, and Air Mauritius (Bofinger, 2017; Moyo, 2020; Muvingi, 2012; SADC, 2018). The air transport service is one of two categories of flying, representing all non-military air transport, both private and commercial. Air transport service can be defined as activities that are directly dependent upon transporting people and goods by air to, from or within a country, region or a continent. This includes airline and airport operations, and covers scheduled and charter flights, general aviation, airport maintenance, air traffic control and regulation. It also covers activities directly serving air passengers, such as check-in, baggage-handling, and on-site retailing and catering facilities (Forecasting, 2006).

Commercial air transport service may be understood as those commercial air transport activities that precisely depend on performing air transport operations from, to or inside a country. These commercial air transport activities include all air transport operations which involve providing passenger and cargo air transport services (Forecasting, 2006; International Civil Aviation Organization [ICAO], 2004; Moselle et al., 2002). The focus of this research study is on passenger air transport services and, therefore, does not cover cargo air transport services.

Passenger air transport services are classified as domestic and international passenger air transport services. International passenger air transport service is a form of commercial passenger air transport service where a flight passes through the airspace over the territory of more than one country. A domestic passenger air transport service is a form of commercial passenger air transport service where the departure and the arrival of a flight take place within the same country (Forecasting, 2006; ICAO, 2004; Moselle et al., 2002). The research study is limited to international passenger air transport service, and thus, makes no attempt to include domestic passenger air transport services.

passenger air transport services may be categorised as scheduled, non-scheduled, and general; and advertised and informal international passenger air transport services. A scheduled international passenger air transport service is a passenger air transport service that is operated between two or more places according to a published timetable, or with regular or frequent flights, thereby constituting a recognisably systematic series. A non-scheduled international passenger air transport service is a passenger air transport service apart from a scheduled international passenger air transport service, which may be for hire and/or non-scheduled purposes. The International Civil Aviation Organisation (ICAO) defines general international passenger air transport service as all international air transport service operations apart from scheduled international passenger air transport services and non-scheduled international passenger air transport services that are operated for remuneration or charter (Forecasting, 2006; ICAO, 2004; Moselle et al., 2002). However, the focus of the research study is on scheduled and advertised international passenger air transport services. Accordingly, for purposes of this study, air transport service may be defined as scheduled and advertised international passenger air transport service may be defined

The incredible development and growth of the scheduled and advertised international passenger air transport service has made access to flight amazingly widespread. The existence of the scheduled and advertised international passenger air transport service is attributed to terrific advances in aerospace technology. With the application of the modern aerospace technology, aircraft operate efficiently and safely throughout the world to areas under a broad spectrum of climates. The availability of the modern aircraft enables even the emerging economies to access the most advanced products in the world. With the modern nonstop ultra-range aircraft today, airlines decide to take any viable route to reach far off destinations. Above all, modern aerospace technology has contributed to the decline of air travel cost and, as a result, airlines have progressively reduced air fares, thereby enticing more and more industries and individuals to regard air transport as a routine mode of travel (Button, 2008; InterVISTAS, 2006,

2015). The nature of air transport is peculiar in that it has been a cross-border operation since its emergence. Most businesses initially develop and expand locally and then turn into international, but flying is characteristically an international operation (Moselle et al., 2002; Sengur, 2016). Consequently, the international air transport service industry is a highly desegregated industry and, therefore, contingent upon a heterogeneous international air transport service business environment that reflects governmental economic preferences (InterVISTAS, 2006, 2015; International Transport Forum [ITF], 2019). Therefore, it is worth mentioning that the international air transport service business environment is defined by international air transport service market regulatory characteristics, geographical characteristics, and socio-economic factors. International air transport service market regulatory factors are bilateral air service agreements (BASAs), while main geographical and socio-economic factors are distance and gross domestic product (GDP) respectively (Grančay, 2009). However, the research study is mainly interested in the international air transport service market regulatory factors. International air transport service market regulation reflects an understanding by states that there is need to furnish a structure for governing the international air transport service business environment. Therefore, the international air transport service market is contingent upon a restrictive and protectionist regulatory framework that regulates air transport service business between nations (InterVISTAS, 2006, 2015; ITF, 2019). The International Civil Aviation Organization (ICAO), the agency of the United Nations on international civil air transport, instituted an economic regulatory framework to regulate international air transport service markets between members of country-pairs following misunderstandings over the degree of commercial air transport service

between nations. The fundamental elements of this regulatory framework are bilateral air service agreements (BASAs). Provisions found in a BASA are grants of air traffic rights articles, authorized points articles, capacity articles, airfare articles, and designation articles (ICAO, 2004; InterVISTAS, 2006; Moselle et al., 2002). The antiquated and arcane international air transport service market regulatory framework of a complex network of bilateral air service agreements created by the ICAO restricts international air transport service market access and entry. This regulatory framework of BASAs shields local airlines from competition through imposing restrictive and protectionist machinery that oppresses international air transport service market competition. The result has been airlines that hardly improve consumer welfare (InterVISTAS, 2006, 2015; ITF, 2019). However, as is the case with other international business environments, the international air transport service market is shifting towards liberalisation, where the jurisdiction of the government on international air transport service market competition is universally dying out. International air transport service market liberalisation is believed by many as the panacea to the challenges brought about by the antiquated and arcane regulatory framework of a convoluted network of protectionist BASAs in the international air transport service business environment (Button, 2008; ITF, 2019).

liberalise the intra-Africa international air transport service market via the Yamoussoukro Decision (YD) of 1999. The Yamoussoukro Decision was formally enforced in 2000, and was absolutely irrevocable in 2002. African heads of state and government adopted the YD upon recognising that the outmoded regulatory framework of restrictive and protectionist bilateral air service agreements frustrated the development and expansion of the international air transport service in Africa. The Yamoussoukro Decision removes all restrictions on air traffic rights, capacity, airfare, designation,

Heads of state in Africa resolved to

and frequency within Africa. Therefore, African states, including the Southern African Development Community, progressively liberalise the international air transport service market through the Yamoussoukro Decision in order to promote the economic performance of the international air transport service across the Continent (Abate, 2013; Schlumberger, 2010; InterVISTAS, 2014, 2017; Steyn & Mhlanga, 2016; United Nations Economic Commission for

Africa [UNECA], 2002). Some researchers and scholars have conducted empirical research on the United States, the European Union, the United States-European Union Open Skies/Open Area Aviation Area, the African Union, and at global level to investigate the economic impacts of international air transport service market liberalisation on the international air transport service. The current research study reviews empirical research on the impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely international air passenger demand, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor mostly over the period 2000-2022 to reflect on old and contemporary views of scholars and researchers. The research study also reviews empirical research on the impacts of international air transport service market liberalisation on employment in the international air transport service sector and related industries. The empirical research shows that international air transport service market liberalisation fosters international air passenger demand by as much as 75% globally. The empirical research shows that airline deregulation promotes international air passenger demand by as much as 100% in the United States, while international air transport service market liberalisation fosters international air passenger demand by as much as 85% in the European Union. International air passenger volume grows by as much as 70% in the United States-European Union Open Skies/Open Aviation Area. The empirical research shows that international air transport service

market liberalisation fosters international air passenger demand by as much as 60% in the African Union. The empirical research forecasts international air passenger demand to grow by as much as 25% between South Africa and its SADC neighbours. The empirical research studies show that international air transport service market liberalisation fosters the reduction of international passenger airfare by as much as 40% globally. The research shows that airline deregulation promotes the reduction of international passenger airfare by as much as 30% in the United States, while international air transport service market liberalisation fosters the reduction of international passenger airfare by as much as 30% in the European Union. The empirical studies show that international air transport service market liberalisation fosters the reduction of international passenger airfare by as much as 40% in the United States-European Union Open Skies/Open Aviation Area. The studies show that international air transport service market liberalisation promotes the reduction of international passenger airfare by as much as 50% in the African Union. The empirical research forecasts international passenger airfare to drop by as much as 18% between South Africa and its SADC neighbours.

The studies show that international air transport service market liberalisation promotes international passenger departure frequency by as much as 80% globally. The empirical research shows that airline deregulation grows international passenger departure frequency by as much as 65% in the United States, while international air transport service market liberalisation grows international passenger departure frequency by as much as 80% in the European Union. International air transport service market liberalisation promotes international passenger departure frequency by as much as 450% in the United States-European Union Open Skies/Open Aviation Area. The empirical research shows that international air transport service market liberalisation promotes international passenger departure frequency by as much as 40% in the African Union. The empirical research forecasts international passenger airfare to drop by as much as 18% between South Africa and its SADC neighbours.

The research studies show that international air transport service market liberalisation facilitates international revenue passenger load factor by as much as 50% globally. The empirical research shows that airline deregulation facilitates international revenue passenger load factor by as much as 70% in the United States.

The empirical research studies show that international air transport service market liberalisation fosters the creation of jobs by as many as 58 million jobs globally. The empirical research shows that airline deregulation facilitates the creation of jobs by as much as 50% in the United States, while international air transport service market liberalisation facilitates generation of jobs by as many as 1.4 million in the European Union. International air transport service market liberalisation facilitates the generation of jobs by as many as 72,000 in the United States-European Union Open Skies/Open Aviation Area. The empirical research shows that international air transport service market liberalisation facilitates the generation fosters the creation of jobs by as many as 155,000 in the African Union.

impression portrayed by the ideas of researchers and scholars over the period 2000-2022 indicates that the economic impacts of international air transport service market liberalisation on the international air transport service are beneficial for the international air transport service.

The purpose of the current research study is to establish the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The research study has been prompted by the persistent poor economic performance of international air transport service in the Southern African Development Community. The economic performance of the international air transport service continues to be poor despite some countries experiencing some international air transport service market liberalisation through the Yamoussoukro Decision in the SADC.

The research question is interested to know the significance of the actual economic impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor of SADC national airlines. The research question is keen know how significant the actual impact of international air transport service market liberalisation on international air passenger volume is in the Southern African Development Community. The null hypothesis is that the actual impact of international air transport service market liberalisation on international air passenger volume is not significant, while the alternative hypothesis is that the actual impact of international air transport service market liberalisation on international air passenger volume is significant in the Southern African Development Community. The research question is also keen to know how significant the actual impact of international air transport service market liberalisation on international passenger airfare is in the Southern African Development Community. The null hypothesis is that the actual impact of international air transport service market liberalisation on international passenger airfare is not significant, while the alternative hypothesis is that the actual impact of international air transport service market liberalisation on international passenger airfare is significant in the Southern African Development Community.

The research question is also interested to know how significant the actual impact of international air transport service market liberalisation on international passenger

departure frequency is in the Southern African Development Community. The null hypothesis is that the actual impact of international air transport service market liberalisation on international passenger departure frequency is not significant, while the alternative hypothesis is that the actual impact of international air transport service market liberalisation on international passenger departure frequency is significant in the Southern African Development Community. The research question is also interested to know how significant the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is in the Southern African Development Community. The null hypothesis is that the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is not significant, while the alternative hypothesis is that the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is significant in the Southern African Development Community. The research question is also

keen to know how significant the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is in the Southern African Development Community. The null hypothesis is of the view that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is not significant, while the alternative hypothesis is of the view that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant in transport service market liberalisation on jobs in the travel and tourism industry is significant in the Southern African Development Community. The capitalism economic worldview supports the research problem and purpose and, therefore, forms the theoretical framework of the research study. The capitalism economic worldview advocates market liberalisation to foster the reduction of market price through granting service providers the freedom to determine market prices. The capitalism economic worldview champions market liberalisation to facilitate the improvement of service quality through granting competitors access and entry into the market. The capitalism economic worldview also advocates market liberalisation to promote demand through promoting market competition and improvement of service quality. The capitalism economic worldview also champions market liberalisation to foster the creation of jobs in industries through promoting demand (Duncan & Schimpfössl, 2019; Gudmundsson, 2011; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009; Soskice & Hall, 2001).

The research study considers the quantitative approach as appropriate to guide the statistical estimation of the economic impacts of international air transport service market liberalisation. The study considers the cross-sectional approach as appropriate for the evaluation of the economic impacts of international air transport service market liberalisation. The crosssectional approach is appropriate where the impacts of changes in a policy can be segregated, and where traffic data between members of a country-pair are available (Eyisi, 2016; Goundar, 2012; Grančay, 2009; InterVISTAS, 2006, 2015; Queirós et al., 2017; Rahman, 2020). The research study employs econometric models by InterVISTAS (2006, 2015), Myburgh et al. (2006), Abate (2013), and Abate and Christidis (2017, 2020) respectively to estimate the impacts of international air transport service market liberalisation on international passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor in the SADC. The research study considers the secondary data analysis design as an appropriate strategy. The secondary data analysis design is a flexible and robust research design where the researcher does not have to dedicate vast amounts of energy, finances, time, and other resources for the data collection phase because someone else has already collected the data (Cohen et al., 2017; Creswell & Creswell, 2017; Ingham-Broomfield, 2014).

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study defines the population and sample of country-pairs under investigation. The country-pairs generate cross-sectional data on international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor and other relevant variables (see Appendices E-F). The research defines the population as all country-pairs with signed bilateral air service agreements in the Southern African Development Community. The study identifies a population of 49 country-pairs with signed bilateral air service agreements in the SADC (see Appendix B). The research study defines the sample of country-pairs under investigation as country-pairs with operational signed bilateral air service agreements in the SADC. The research study considers non-probability sampling as an appropriate sampling procedure. Among non-probability sampling techniques, the research study considers total population purposive sampling technique as an appropriate non-probability sampling technique for identifying the sample of country-pairs with operational signed

bilateral air service agreements. The idea behind is to identify the entire population of countrypairs with operational signed bilateral air service agreements from the population of 49 countrypairs with signed bilateral air service agreements. The research study identifies the total population sample of 38 country-pairs with operational signed bilateral air service agreements in the SADC. It identifies 21 liberal international air transport service markets, and 17 restrictive international air transport service markets in the country-pairs with operational signed bilateral air service agreements in the Southern African Development Community (see Appendix E7).

The research study also defines the population and sample of secondary data sources for data collection. Secondary data sources are reservoirs from which cross-sectional data generated by the country-pairs may be collected. The population is all non-published and published electronic and printed secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community, while the sample is published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community. Published and non-published electronic secondary data sources for open access such as e-books, e-journals, e-magazines/newspapers, and e-documents are available for free access in the public domain. Among non-probability sampling techniques namely snowball sampling, convenience sampling, incidental sampling, and purposive sampling, the research study considers convenience sampling technique for identifying the sample of published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements (Manna & Mete, 2021; Pandey & Pandey, 2015). The research study employs the Internet and electronic libraries to access published and non-published electronic secondary data sources such as e-books, e-journals, e-magazines/newspapers and e-documents. Civil aviation authorities in the SADC establish private electronic libraries that provide access to non-published and published electronic data sources. The research study considers data triangulation as an appropriate approach to enhancing trustworthiness, reliability and validity of the research results. Data triangulation is appropriate for secondary data analysis (Heale & Forbes, 2013; Manna & Mete, 2021; Olsen, 2004; Pandey & Pandey, 2015).

The research study estimates the econometric models employing respective panel datasets on the 38 international air transport service markets with operational signed bilateral air service agreements in the SADC. Collected over the period 2011-2015, these panel datasets (Appendices F1-F4) are unique and describe liberal and restrictive international air transport markets in the SADC. The research study applies multiple linear regression analysis to estimate the economic impacts of international air transport service market liberalisation. Multiple linear regression fits multivariable econometric models into respective multivariable datasets employing the statistical package for social science (SPSS), and results are presented for the respective questions/hypotheses of the research study (see Figures 3-22 and Tables 1-20). These results help us see the significance and direction of the actual impacts of international air transport service market liberalisation on international air passenger volume, international passenger airfare, international passenger departure frequency, international revenue passenger load factor, and direct employment in the travel and tourism industry in the SADC.

The findings of the research study show that international air passenger volume in liberal international air transport service markets is 62% (p-value = $0.10 = \alpha = 0.10$) on average higher than international air passenger volume in restrictive international air transport service markets. The findings support the alternative hypothesis that the actual impact of international air transport service market liberalisation on international air passenger volume is significant, and reject the null hypothesis that the actual impact of international air transport service market liberalisation on international air passenger volume is not significant in the SADC. The findings of the research study show that international passenger airfare in liberal international air transport service markets is 10 US Cents per kilometer (p-value = $0.032 < \alpha = 0.05$) on average lower than international passenger airfare in restrictive international air transport service markets. The findings support the alternative hypothesis that the actual impact of international air transport service market liberalisation on international passenger airfare is significant, and reject the null hypothesis that the actual impact of international air transport service market liberalisation on international passenger airfare is not significant in the SADC. The findings of the research
study show that international passenger departure frequency in liberal international air transport service markets is 51% (p-value = $0.071 < \alpha = 0.10$) on average higher than international passenger departure frequency in restrictive international air transport service markets. The findings approve the alternative hypothesis that the actual impact of international air transport service market liberalisation on international passenger departure frequency is significant, and disapprove the null hypothesis that the actual impact of international air transport service market liberalisation on international passenger departure frequency is not significant in the SADC.

The findings of the research study show that international revenue passenger load factor of SADC national airlines in liberal international air transport service markets is 53% (p-value = $0.039 < \alpha = 0.05$) on average higher than international revenue passenger load factor of SADC national airlines in restrictive international air transport service markets. The findings approve the alternative hypothesis that the actual impact of international air transport service market liberalisation on international revenue passenger load factor is significant, and reject the null hypothesis that the actual impact of international air transport service market liberalisation on international revenue passenger load factor is not The findings of the research study show that direct significant in the SADC. jobs in the T&T industry in countries with liberal international air transport service markets are 62% (p-value = $0.10 = \alpha = 0.10$) times on average higher than direct jobs in the T&T industry in countries with restrictive international air transport service markets. The findings support the alternative hypothesis that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant, and reject the null hypothesis that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is not significant in the SADC.

The findings of the research study address the research problem and purpose. The findings of the study are consistent with the capitalism economic worldview. The findings are also consistent with the existing body of research on the economic impacts of international air transport service market liberalisation. These findings point to the significance of international air transport service market liberalisation in the promotion of the international air transport service in the Southern African Development Community. The findings underscore the importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport market in order to optimally promote the international air transport service in the SADC. Therefore, the research study recommends that the SADC should fully liberalise the international air transport service market through the Yamoussoukro Decision. The knowledge on the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community, a region where the topic is under-researched, provides original contribution to the existing body of research on the topic.

Statement of the Research Problem

The problem is the persistent poor economic performance of the international air transport service in the Southern African Development Community. The economic performance of the international air transport service continues to be poor in spite of some economies experiencing some international air transport service market liberalisation through the Yamoussoukro Decision in the Southern African Development Community. For example, the survey by Pearce (2017) reveals that Airlines in Africa were the poorest economic performers at net post-tax losses of 800 US\$ million, 1.0 US\$ billion and 100 US\$ million in 2014, 2015 and 2016 respectively; and it also claims that the scenario would continue with an estimated net post-tax loss (US\$ billion) of 100

US\$ million in 2017 (Pearce, 2017). The latest survey by Pearce (2019) demonstrates that African airlines continued to be the poorest economic performers with a downward spiral at net post-tax losses of 100 US\$ million and 200 US\$ million in 2018 and 2019 respectively, with the Southern African Development Community (SADC) alone reporting an approximate collective \$300 million loss in 2018. This survey further contends that the trend would persist with African airlines with a projected net post-tax loss of 200 US\$ million in 2020 (Pearce, 2019).

Southern The African Development Community started undertaking some international air transport service market regulatory reforms through the Yamoussoukro Decision in 2000, expecting international air transport service market liberalisation to improve the economic performance of the international air transport service, and to enhance consumer welfare in the SADC. International air transport service market liberalisation is advocated by many as the panacea to the economic challenges facing the international air transport service. It is believed to be the right direction for the international commercial air transport service to benefit the most out of the global air transport service market. International air transport service market liberalisation fosters competition in the international air transport service market through promoting market access and entry. International air transport service market competition in turn promotes international air passenger demand through fostering competition in international passenger airfares and international air transport service quality (Cetin & Eryigit, 2018; Naz, 2014; Scott, 2006). These beliefs, from both outside and within the international air transport service sector, have made it incumbent upon economies in the Southern African Development Community to undertake some international air transport service market regulatory reforms through the Yamoussoukro Decision. Accordingly, the international air transport service market is experiencing new trends towards liberalisation through the Yamoussoukro Decision, and

government jurisdiction over international air transport service market competition is gradually dying out in the Southern African Development Community (Moyo, 2020; Myburgh et al., 2006; SADC, 2018; Surovitskikh & Lubbe, 2015).

As revealed above, the economic performance of the international air transport service continues to be poor (Pearce, 2017, 2019) in spite of some economies experiencing some international air transport service market liberalisation through the Yamoussoukro Decision in the Southern African Development Community (Moyo, 2020; Myburgh et al., 2006; SADC, 2018; Surovitskikh & Lubbe, 2015). Nevertheless, it is worth mentioning that the economic performance of the international air transport service is not only influenced by the international air transport service market regulatory environment, but also by geographical and socio-economic characteristics of a particular region such as distance between international air transport service markets, size of the international air transport service markets, existing geographical barriers between the international air transport service markets, population density of the region, purchasing power of the population, and overall economic environment of the region (Grančay, 2009). However, international air transport service market liberalisation appears to have had multiple economic impacts on the international air transport service in the SADC (Mhlanga, 2017; Myburgh et al., 2006; Pirie, 2006; Surovitskikh & Lubbe, 2015). Nevertheless, the main challenge has been inadequate knowledge on the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The existing body of research on the economic impacts of international air transport service market liberalisation is bereft of research that has attempted to empirically establish the significance of the magnitudes and the statistics of the actual economic impacts of international air transport service market liberalisation on the international air transport

service in the SADC. Therefore, in an attempt to establish whether the actual economic impacts of international air transport service market liberalisation on the international air transport service are significant in the SADC, this research study commits to empirically investigate the actual economic impacts of international air transport service market liberalisation on the international air transport service in the SADC.

Purpose of the Study, Aim of the Study, and Objectives of the Study

Purpose of the Research Study

The purpose of this quantitative research study is to establish the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The existing research has scarcely established whether the magnitudes and the statistics of the actual economic impacts of international air transport market liberalisation on the international air transport service are significant in the SADC.

and scholars came to the limelight advocating international air transport service market liberalisation as the right direction for the international commercial air transport service to benefit the most from the world air transport service market, the Southern African Development Community embarked on undertaking international air transport service market regulatory reforms through the principles of the Yamoussoukro Decision (Myburgh et al., 2006; Surovitskikh & Lubbe, 2015). It seems international air transport service market liberalisation has had multiple economic impacts on the international air transport service in the SADC (Mhlanga, 2017; Myburgh et al., 2006; Pirie, 2006; Surovitskikh & Lubbe, 2015). The current research study is committed to establish whether the magnitudes and the statistics of the actual economic impacts of international air transport service market liberalisation on the international air transport service are significant in the SADC.

Aim of the Research Study

The aim of this quantitative research study is to empirically investigate the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community in order to establish the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the SADC. The research study examines the actual impacts of international air transport service market liberalisation on the international air transport service, particularly on the demand and supply side variables of the international air transport service namely international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor of SADC national airlines. The research study further examines the actual direct impact of international air transport service market liberalisation on employment in industries related to the international air transport service sector specifically the travel and tourism industry in the SADC. Accordingly, the research study addresses the specific objectives presented below.

Objectives of the Research Study

Objective 1: Investigate the actual impact of international air transport service market liberalisation on international air passenger volume in the Southern African Development Community

Objective 2: Examine the actual impact of international air transport service market liberalisation on international passenger airfare in the Southern African Development Community

Study the actual impact of international air transport service market liberalisation on international passenger departure frequency in the Southern African Development Community

Objective 4: Investigate the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines in the Southern African Development Community

Objective 5: Examine the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry in the Southern African Development Community

Nature and Significance of the Research Study

Nature of the Research Study

The research study involves estimating the significance of the magnitude and statistics of the economic impacts of international air transport service market liberalisation on the international air transport service. Accordingly, the research study opts for the quantitative approach. The study employs econometric models to statistically estimate the economic impacts of international air transport service market liberalisation on the international air transport service. Therefore, the research study considers statistical data as appropriate for the estimation of the econometric models. The research study opts for the secondary data analysis design. Accordingly, the research study considers statistical data for the estimation of the econometric models. The potential sources of secondary statistical data on air traffic and socio-economic indicators are existing databases compiled by reputable and reliable organisations such as the International Civil Aviation Organization (ICAO), the SADC Development Indicators, the World Development Indicators, the United Nations Tourism Organization (UNWTO), and the World Travel and Tourism Council (WTTC). The ICAO, SADC, UNWTO, and the WTTC statistical databases are some of the standard sources of air traffic data in the air transport field (Schlumberger, 2010). The research study considers multiple linear regression analysis as appropriate for the estimation of the econometric models. It opts for the statistical package for social sciences (SPSS) to handle multiple linear regression analysis.

Significance of the Research Study

Stimulated by the United States and the European Union, the Southern African Development Community has invested some effort towards international air transport service market regulatory reforms, believing that the economic benefits of international air transport service market liberalisation are enormous. This research study estimates the actual economic impacts of international air transport service market liberalisation on the international air transport service to establish whether the economic impacts of international air transport service market liberalisation on the international air transport service are significant in terms of magnitude and statistics in the Southern African Development Community. The findings of the research study will inform SADC governments, the international air transport service industry, international organisations, development partners, and the donor community about the magnitude and statistical significance of the economic impacts of international air transport service market liberalisation in the SADC.

of the findings, the research study will inform SADC governments and other stakeholders about the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. Knowledge of the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the SADC may influence states with pessimistic attitude towards the concept of international air transport service market liberalisation to embrace the concept in the SADC. Knowledge of the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service may also invigorate states that experienced some international air transport service market liberalisation to fully liberalise international air transport service markets through the Yamoussoukro Decision in the SADC. The research study will also inform the international air transport service industry, which may capitalise on the beneficial impacts, and mitigate the defeatist ones, if the industry is to survive and develop in the SADC. The research study will inform international organisations, development partners, and the donor community, and therefore, may stimulate funding for the implementation of the Yamoussoukro Decision. The research study will also inform the research world about the magnitude and statistical significance of the economic impacts of international air transport service market liberalisation in the SADC, and thus, may provoke further research on the topic. Knowledge on the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community, a region where the topic is understudied, contributes to the existing body of research on the economic impacts of international air transport service market liberalisation.

Research Questions and Research Hypotheses

The overall research question seeks to know whether the actual economic impacts of international air transport service market liberalisation on the international air transport service are significant in the Southern African Development Community. Specifically, the question intends to know whether the actual impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service, namely international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor, are significant in terms of magnitude and statistics in the SADC. The research question further seeks to know whether the actual direct impact of international air transport service market liberalisation on employment in the travel and tourism industry is significant in the SADC. Therefore, the research study responds to the following specific research questions:

Q1.

How significant is the actual impact of international air transport service market liberalisation on international air passenger volume significant in the Southern African Development Community?

Q2.

How significant is the actual impact of international air transport service market liberalisation on international passenger airfare significant in the Southern African Development Community?

Q3.

How significant is the actual impact of international air transport service market liberalisation on international passenger departure frequency significant in the Southern African Development Community?

Q4.

How significant is the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines significant in the Southern African Development Community? How significant is the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry significant in the Southern African Development Community?

Research Hypotheses

Based on the existing body of research, international air transport service market liberalisation has become increasingly necessary for the success of the air transport service industry. International air transport service market liberalisation is considered by many as the gateway to the enhancement of competition and the improvement of consumer welfare (Weinberg, 1991). International air transport service market liberalisation is also perceived by many as the right direction if international commercial air transport service has to benefit the most out of the global air transport service market (Button, 2008). Unsurprisingly, states believe that serious investment towards international air transport service market liberalisation is a necessary initiative if the international air transport service industry is to grow and develop into a relevant and dominant player in the world air transport service market. Such beliefs have resulted in intense pressures on nations to review outmoded international air transport service market governance policies (Weinberg, 1991).

United States Deregulation Act of 1978, many countries and regions have invested resources towards international air transport service market regulatory reforms. The states have opened their skies, and have provided freedom for foreign airlines to access their air transport service markets; freedom for airlines to determine aircraft capacity; and freedom for airlines to determine passenger airfare. They have also provided freedom for airlines to determine the number of aircraft they can operate between nations, and freedom for airlines to determine air routes to operate on (KC, 2012;

Vietor et al., 2000). Numerous studies have established that the economic impacts of international air transport service market liberalisation have proved to be beneficial for the international air transport service. By providing freedom for foreign airlines to access national air transport service markets; freedom for airlines to determine aircraft capacity; freedom for airlines to determine passenger airfare; freedom for airlines to determine number of aircraft to operate between nations; and by providing freedom for airlines to determine air routes, international air transport service market liberalisation promotes free market competition. Free international air transport service market competition fosters the growth of international air passenger demand, reduction of international passenger airfares, increase of international passenger departure frequencies, growth of international revenue passenger load factors, and the generation of employment (Abate, 2013; Fu et al., 2010; InterVISTAS, 2009; Piermartini & Fache Rousová, 2008).

The overall research question seeks to know whether the actual economic impacts of international air transport service market liberalisation on the international air transport service are significant in the Southern African Development Community. Specifically, the research question intends to know whether the actual impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service, namely international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor, are significant in the SADC. The research question further seeks to know whether the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant in the SADC. Therefore, basing on the existing body of research, the research study draws the following specific hypotheses: **H10**: The actual impact of international air transport service market liberalisation on international air passenger volume is not significant in the Southern African Development Community.

impact of international air transport service market liberalisation on international air passenger volume is significant in the Southern African Development Community.

H20: The actual impact of international air transport service market liberalisation on international passenger airfare is not significant in the Southern African Development Community.

H2a: The actual impact of international air transport service market liberalisation on international passenger airfare is significant in the Southern African Development Community. H30: The actual impact of international air transport service market liberalisation on international passenger departure frequency is not significant in the Southern African Development Community.

H3a: The actual impact of international air transport service market liberalisation on international passenger departure frequency is significant in the Southern African Development Community.

H40: The actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is not significant in the Southern African Development Community.

H4a: The actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is significant in the Southern African Development Community.
H50: The actual direct impact of international air transport service market liberalisation on jobs in the travel

actual

H1a:

The

and tourism industry is not significant in the Southern African Development Community.

H5a: The actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant in the Southern African Development Community.

a system of five chapters namely Introduction; Literature; Research Method; Findings; and Implications, Recommendations and Conclusions. The Introduction chapter presents the research problem, the research purpose, the research questions, the research hypotheses, and the objectives of the research study. The Introduction also describes the nature and the significance of the research study. The Literature chapter provides theoretical and empirical support for the rationale for the research study, the research problem, the research purpose, the research questions, and the research hypotheses through respectively identifying the economic worldview for the theoretical framework, and exploring empirical research studies that investigate the economic impacts of international air transport service market liberalisation on the international air transport service. The Research Method chapter provides the structure that guides the systematic investigation into the economic impacts of international air transport service market liberalisation on the international air transport service to respond to the research problem, the research purpose, the research questions, and the research hypotheses. This chapter identifies research approach and design, sampling approach, research instruments, and data collection and analysis approaches for the research study. The Findings chapter generates knowledge that responds to the research purpose, research questions and the research hypotheses. It establishes whether the actual economic impacts of international air transport service market liberalisation on the international air transport service are significant in the SADC. The Implications, Recommendations and

This research study is organised into

Conclusions chapter discusses the extent to which the findings of the research study address the research problem and purpose, and align with theoretical framework and the existing literature. It draws implications, recommendations for application and further research, and conclusions on the entire research study. The Southern African Development Community (SADC) is a regional economic community founded in 1992. The membership of the SADC currently comprises Angola, Botswana, Comoros, Democratic Republic of the Congo, Eswatini (Swaziland), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, United Republic of Tanzania, Zambia, and Zimbabwe. The SADC, where mostly English is the official language, currently has a total population of 363 million, with the Democratic Republic of Congo at 90 million, the United Republic of Tanzania at 60 million, followed by South Africa at 59 million. Comoros has the lowest population of less than 3 million. The SADC is categorised as an emerging economy. Typical of an emerging economy, the SADC still has low standards of per capita GDP, standard of industrialisation, and general standard of living. The general trend of nominal per capita GDP currently hovers around \$2,058, much below \$12,000, the per capita GDP considered by many economists to be sufficient for a developed status (Barrett, 2007). Popular modes of transport are road and air transport. However, the SADC is still characterised by substandard air transport technological infrastructure and underdeveloped air network connectivity. The air transport service industry is symbolised by low standard of growth and development. Substandard air transport service operations and low standard state-owned national airlines still symbolise air transport services in the Southern African Development Community. Some state-owned national airlines include the South African Airways, TAAG Angolan Airlines, LAM Mozambican Airlines, Air Namibia, Air Zimbabwe, Air Botswana, Air Tanzania, and Air Mauritius (Bofinger, 2017; Moyo, 2020; Muvingi, 2012; SADC, 2018).

CHAPTER 2: LITERATURE

The purpose of this quantitative research study is to establish the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The existing research has hardly established whether the magnitudes and the statistics of the actual economic impacts of international air transport market liberalisation on the international air transport service are significant in the SADC. Ever since researchers and scholars came to the limelight advocating international air transport service to benefit the most from the world air transport service market, the Southern African Development Community embarked on undertaking international air transport service market regulatory reforms through the Yamoussoukro Decision (Myburgh et al., 2006; Surovitskikh & Lubbe, 2015). It appears international air transport service in the SADC (Mhlanga, 2017; Myburgh et al., 2006; Pirie,

2006; Surovitskikh & Lubbe, 2015). The current research study commits to establish whether the magnitudes and the statistics of the actual economic impacts of international air transport service market liberalisation on the international air transport service are significant in the SADC.

This chapter is designed to provide theoretical and empirical support for the research purpose. To theoretically support the research purpose, the chapter explores relevant economic worldviews and identifies an appropriate economic worldview for the theoretical framework. To empirically support the research purpose, the chapter explores relevant empirical research studies that examine the economic impacts of international air transport service market liberalisation on the international air transport service. The chapter is critical and fairly descriptive in reviewing the empirical literature on the economic impacts of international air transport service market liberalisation on the international air transport service. With the focus on empirical literature over the period 2000-2022, the chapter reflects fairly on old and contemporary views of researchers and scholars on the economic impacts of international air transport service market liberalisation on the international air transport service. The literature review is organised chronologically within the sections falling under the chapter in order to reflect the general progression of the ideas of researchers and scholars on the economic impacts of international air transport service market liberalisation (Boote & Beile, 2005; Hart, 2018; Osanloo & Grant, 2016; Randolph, 2009).

The empirical literature discussed in this chapter is mostly peer-reviewed articles sourced from journals and books accessed from Google Scholar and Google Search. Just like Google Search, Google Scholar is an online, freely accessible search engine that lets users look for both physical and digital copies of peer-reviewed articles. However, Google Scholar specifically searches scholarly works from a variety of sources, including academic publishers and universities. Citations for the literature in the chapter are shown in the Reference Section following the APA 7 version referencing system.

Keywords: capitalism economic theory, socialism economic theory, mixed economic theory, international air transport service market liberalisation, economic impacts of international air transport service market liberalisation, international air passenger volume, international passenger airfare, international passenger departure frequency, international revenue passenger load factor

Theoretical Framework

The theoretical framework is the most important aspect of the research study. The theoretical framework underpins the entire process of a research study. It serves as the blueprint of the entire research study. The theoretical framework theoretically justifies the research study, supports the statement of the research problem, the statement of the research purpose, the research questions, and the research hypotheses (Abend, 2008; Osanloo & Grant, 2016; Pucheta-Martínez et al., 2020). This section identifies the economic worldview that forms the theoretical framework of the research study.

Capitalism, Socialism and Mixed Economic Worldviews

The three main alternate economic worldviews that provide the foundation and structure for modern socio-political economies are capitalism, socialism and mixed economic theories (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Shaikh, 2009; Scott, 2006; Soskice & Hall, 2001). The research study discusses the three alternate economic worldviews and selects an appropriate economic worldview for the theoretical framework of the research study. **The** Capitalism Economic Worldview: One of the key economic worldviews with complex definitions and complicated histories in social studies is the capitalism economic worldview. The modern capitalism economic worldview is traditionally traced to the 18th century commentary "An Inquiry into the Nature and Causes of the Wealth of Nations" by the Scottish political economist, Adam Smith. Adam Smith generally advances a self-regulatory market oriented economy, in which the production and the pricing of goods or services, as well as the income of individuals, are solely dictated by market forces rather than by government central planning. The government has little intervention except as a guarantor of the transactional environment through development and enforcement of the regulatory environment. The capitalism economic perspective insists that all forceful government regulation of the market represents indefensible interference, and that economies will perform best when government only plays a defensive role in order to ensure the smooth operation of free markets. In essence, the capitalism economic viewpoint opposes government intervention and protectionism when it limits freedom of trade and freedom of market competition, but supports government intervention and protectionism on property rights and resolution of market challenges (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Soskice & Hall, 2001).

The capitalism economic worldview assumes that market forces, such as supply and demand, best determine what is right for the wellbeing of a nation, and the market forces are based on rational decisions made by consumers seeking to optimise or maximise their benefits from various market transactions. The forces of supply and demand freely determine market prices in a fashion that can serve the best interests of society. Essentially, the capitalism economic theory believes that the private sector is intrinsically progressive, productive and reliable. It also assumes that private institutions are inherently superior to public institutions with regard to the delivery of goods and services. The capitalism economic theory believes that appropriate criterion of social performance is market efficiency. The capitalism economic theory is founded on the following principles (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Rowe, 2017; Scott, 2006; Soskice & Hall, 2001): Right to Private Property: The capitalism economic worldview is founded on the right for people to own tangible assets such as land and houses, and intangible assets such as stocks and bonds.

Right to Profit Motive/Self-interest: The capitalism economic worldview is founded on the right for people to pursue their own good regardless of socio-political pressure. Freedom of Market Competition: The capitalism economic worldview is founded on the freedom of market competition to maximise social welfare of consumers. Market competition is the fundamental characteristic of a free market economy, and is an essential safeguard against the exploitation of consumers. Market competition maximises social welfare of consumers through the promotion of production efficiency and price reduction.

Freedom of Price Determination: The capitalism economic worldview is founded on a free price determination mechanism to promote competitive pricing of goods and services. The freedom of price determination promotes the space for free and efficient functioning of price mechanism. Such a free price determination mechanism encourages competitive pricing of goods and services, thereby protecting consumers against exploitation.

Freedom of Enterprise: The capitalism economic worldview is founded on the freedom of enterprise with regard to production and investment. In a capitalism economy, freedom of enterprise promotes micro and macro socio-economic development and growth. Freedom of enterprise implies that individuals and business firms have the freedom to acquire resources and

invest them for the production of goods and services.

Limited Role of Government: The capitalism economic worldview is founded on the limited role of government to protect the rights of private citizens and maintain an orderly environment that facilitates proper functioning of markets. Price systems can facilitate an orderly environment for proper functioning of markets better than the government. Therefore, price systems should be entrusted with the role of facilitating an orderly environment for proper functioning of markets.

However, Adam Smith's model of capitalism has been criticised for exacerbating forms of inequality such as mass income disparity. It has also been criticised for promoting unreliable and unstable economic growth. Many capitalism critiques stem from the theories of Karl Marx, the 19th century philosopher and economist whose work brought about the Marxism (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Shaikh, 2009; Scott, 2006; Soskice & Hall, 2001). The following discusses the role of the capitalism theory in the international air transport service business environment. **The**

Socialism Economic Worldview: The socialism economic worldview is one of the alternatives to the capitalism economic worldview. Robert Owen, Charles Fourier, Pierre-Joseph Proudhon, Louis Blanc, Charles Hall and Saint-Simon are some of the pioneers and renowned advocates of the socialism economic perspective. According to Karl Marx, socialism was to act as a precursor to communism to displace capitalism. The socialism economic viewpoint advocates collective ownership of the means of production either by workers or by government. It champions income and social equality. The socialism economic worldview opposes the right to profit motive/self-interest. The government and other social institutions intervene in economic affairs in order to advance the ideals of the socialism economy perspective. Russia, Hungary, Poland, Romania,

Vietnam, Yugoslavia are some of the important countries that attempted socialism. Socialism economies exhibit the principles below (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Shaikh, 2009; Scott, 2006; Soskice & Hall, 2001):

Collective Property: There is

no right to own private property in a socialism economy. The socialist government collectively owns all the property including business enterprises in the country.

Planned Economy: In a socialism economy, central problems of the economy rest with the government. The government centrally makes decisions on what to produce, how to produce it, when to produce it, for whom to produce it, and how much to produce. The government owns all the economic planning and policy making.

Decisions in Collective Interest: All the decisions are made by the government in the collective interest of a socialist country. People are directed to follow the instructions of the government and are not allowed to object to any decision or policy of the socialist government. **Reduced Income Inequality:** In a socialism economy, the government makes arbitrary decisions on wages in all fields to reduce income inequality. There is no objection or bargaining on wages in order to force the wages to remain in parity in all fields.

Restriction on Market Forces: In a socialism economy, the government restricts market forces of demand and supply from controlling market mechanism. The government in its own right makes all the market decisions.

Centralised Economy: In a socialism economy, the government owns extroverted authority over all economic decisions. Central economic commands by the government are to be followed by everyone.

Non-existence of Private Sector: The socialism economy never allows the private sector.

Everyone must earn a living by working for the government and earn wages that are set arbitrarily by the government. The

socialism economic worldview is criticised for advocating ideas that are unrealistic. Critics of the socialism theory contend that economic policies that are based on solidarity and fairness are highly complex to implement. It is challenging for the central authority to make decisions that are fair for all because of the conflicting goals between citizens of a country. The central authority also requires an enormously great amount of planning to manage the entire national economy. The central economic planning system is likely to be fraught with inefficiencies and bureaucratic challenges due to the state owning an extroverted authority over setting aggregate economic goals, and providing detailed instructions to every state enterprise on production goals, allocation of resources, and prices of goods and services (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Shaikh, 2009; Scott, 2006; Soskice & Hall, 2001).

The Mixed Economic Worldview: Most

states in the real world employ the mixed economic worldview to provide the structure and support for their national economies. The economist John Maynard Keynes championed the mixed economic theory in the 10930s when some enterprise economies experienced a great economic depression. These industrial economies experienced rampant unemployment and decline of national incomes. John Maynard Keynes advocated state intervention in order to stabilise the economies (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Shaikh, 2009; Scott, 2006; Soskice & Hall, 2001).

The mixed economic worldview combines the valuable characteristics of the capitalism economic theory and the socialism economic theory. The mixed economic theory lies on a continuum somewhere between the principles of the pure socialism economic theory and the principles of the pure capitalism economic theory. It champions the coexistence of privately owned and state owned means of production, and the state plays a certain extent of regulatory role. The mixed economic theory recommends that markets should play a dominant role, and the government should play a regulatory role to promote social welfare, and to correct market failures such as traffic congestion. Mixed economies follow the principles below (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Shaikh, 2009; Scott, 2006; Soskice & Hall, 2001):

Public and Private Sector Coexistence: The public sector and the private sector coexist in a mixed economy. In most mixed economies, the state owned sector provides transport, communication, defense, currency management, and utilities such as water, gas, and electricity. The private sector owns all the other industries.

Prices and Government Regulation: In contrast to the capitalism economic system, the state intervenes in the regulation of market prices in the mixed economic system. The state subsidises the production of necessities to encourage low pricing of the necessities. On the other hand, the state imposes high tariff rates on luxuries with inelastic demand.

Market Imperfection and Government Regulation: The mixed economy eradicates cartels, and controls oligopolistic and monopolistic business practices. Thus, in industries where cartels exist, the state intervenes to eradicate the cartels, and to limit oligopolistic and monopolistic business practices. Sometimes the state sets ceiling prices for goods and services to limit the burden of inflation.

Income Distribution and Government Intervention: The state imposes progressive taxes, sets ceiling prices for necessities, and sets minimum wages for employees in order to redistribute income. To promote a certain social activity, economic activity or socio-economic

Social

Objectives and Public Sector: Mostly, the public sector provides necessities such as transport, communication, defense, currency management, and utilities such as water, gas, electricity. The state ensures that these public enterprises never raise prices to foot operational losses by subsidising them. Sometimes the state bears responsibility for losses to mitigate public rebellion over inflation. **Private**

Sector Promotion: In the mixed economy, the state offers incentives to the private sector, and ensures that there is a level playing field for the private sector to compete with the public sector. The state promotes the private sector in industries where the public sector and the private sector coexist by providing freedom for market forces of supply and demand to work, and ensuring that the private sector is not crowded out by the public sector. Liberalisation,

Deregulation and Privatisation: The mixed economic worldview allows the private sector to take over public sector enterprises that are failing to run efficiently, or public sector enterprises which the private sector can run better than the state. The mixed economic theory permits private participation in production, which in return allows healthy competition that can result in profit. By allowing for competition, the mixed economic theory also fosters an environment of innovation and efficiency, having companies compete for creating better products or services for consumers.

However, the mixed economic worldview has been criticised for inheriting some problems and challenges from the capitalism economic theory. Among others, the mixed economic theory has been criticised for lacking an ethical structure to influence social and human development. The mixed economic theory has also been criticised for retaining the interest free financial system from the socialism economic theory (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Shaikh, 2009; Scott, 2006; Soskice & Hall, 2001).

The Economic Worldview Selected for the Theoretical Framework

The capitalism economic worldview forms the theoretical framework of the research study. The capitalism economic theory supports the statement of the research problem, the statement of the research purpose, the research questions and the research hypotheses. Also known as free market economic theory, free enterprise economic theory, Anglo-Saxon model, and Neo-American model, the capitalism economic worldview advocates market liberalisation to promote demand through fostering market competition. The capitalism economic worldview believes market competition promotes demand through fostering the reduction of market price. The capitalism economic worldview also advocates market liberalisation to promote demand through fostering the improvement of service quality. The capitalism economic worldview believes that market liberalisation fosters the improvement of service quality through granting competitors access and entry into the market (Duncan & Schimpfössl, 2019; Gudmundsson, 2011; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009; Soskice & Hall, 2001). In the international air transport service sector, the capitalism economic worldview challenges political economies to liberalise the international air transport service market to promote international air passenger demand through fostering international air transport service market competition. International air transport service market competition promotes international air passenger demand through fostering the reduction of international passenger airfare. The capitalism economic worldview also challenges political economies to liberalise the international air transport service market to promote international air passenger demand through fostering the

improvement of international air transport service quality. The capitalism economic worldview believes that international air transport service market liberalisation fosters the improvement of international air transport service quality through allowing foreign competitors access and entry into the international air transport service market. Figure 1 depicts a model that shows how international air transport service market liberalisation promotes international air passenger demand through facilitating the reduction of international passenger airfare and the improvement of international air transport service quality (Cetin & Eryigit, 2018).

The capitalism worldview economic champions market liberalisation to foster the reduction of market price through granting service providers the freedom to determine market prices. The economic worldview believes in a selfregulatory market oriented system that grants service providers the freedom to determine market prices in a fashion that serves the best interests of customers (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009; Soskice & Hall, 2001). In the international air transport service sector, the capitalism economic worldview challenges political economies to liberalise the international air transport service market to facilitate the reduction of international passenger airfare through granting airlines the freedom to determine international passenger airfares. The capitalism economic worldview believes that the freedom to determine international passenger airfares facilitates the reduction of international passenger airfare through promoting competition in international passenger airfares. Figure 1 depicts how international air transport service market liberalisation facilitates the reduction of international passenger airfare through granting airlines the freedom to determine international passenger airfares (Cetin & Eryigit, 2018).

The capitalism economic worldview champions market

liberalisation to foster the improvement of service quality through granting competitors access and entry into the market. The economic worldview believes in a self-regulatory market oriented system that allows competitors access and entry into the market to foster the improvement of service quality in a manner that serves the best interests of customers (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009; Soskice & Hall, 2001). In the international air transport service sector, the capitalism economic worldview encourages political economies to liberalise the international air transport service market to foster the improvement of international passenger departure frequency through granting foreign competitors access and entry into the international air transport service market. The capitalism economic worldview believes that the freedom for foreign competitors to access and enter the international air transport service market facilitates the improvement of international passenger departure frequency through promoting competition in international passenger departure frequencies. Figure 1 depicts how international air transport service market liberalisation fosters the improvement of international passenger departure frequency through granting foreign competitors access and entry into the international air transport service market (Cetin & Eryigit, 2018).

The capitalism economic worldview advocates market liberalisation to foster the improvement of load factor by promoting capacity utilisation. The economic worldview believes in a self-regulatory market oriented system that facilitates capacity utilisation to foster the improvement of load factor in a manner that serves the best interests of service providers (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009; Soskice & Hall, 2001). In the international air transport service sector, the capitalism economic worldview challenges governments to foster the improvement of international revenue

passenger load factor by promoting international revenue passenger kilometers. The capitalism economic worldview believes that international air transport service market liberalisation promotes international revenue passenger kilometers by granting airlines access and entry into any international air transport service market. Figure 1 shows how international air transport service market liberalisation promotes international revenue passenger kilometers by granting airlines access and entry into any access and entry into international air transport service markets of their choice (Cetin & Eryigit, 2018). The capitalism economic

worldview advocates market liberalisation to foster the creation of employment in industries by promoting demand. The economic worldview recommends a self-regulatory market oriented system that promotes demand to foster the creation of employment in industries in a fashion that serves the best interest of the economy. The economic worldview believes that increased demand facilitates the creation of extra jobs in industries (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009; Soskice & Hall, 2001). In the international air transport service sector, the capitalism economic worldview encourages governments to liberalise the international air transport service sector and related industries by promoting international air passenger demand. Increased international air passenger demand facilitates the creation of extra jobs in the international air transport service sector and related industries. Figure 1 depicts how international air transport service market liberalisation promotes market outcomes including employment in the international air transport service sector and related industries. Figure

Some political economies in the world have undertaken some international air transport service market liberalisation initiatives to promote competition in the international air transport service market. Overwhelming research has been conducted to investigate the impacts of the international air transport service market regulatory reforms. Some researchers and scholars implicitly or explicitly apply the capitalism economic theory to underpin ex-post and ex-ante empirical research studies that examine the impacts of the international air transport service market liberalisation initiatives. For example, the capitalism economic theory underpins the ex-ante empirical research study by InterVISTAS (2006) titled "The Economic Impacts of Air Service Liberalisation". This research study investigates the economic impacts of international air transport service liberalisation employing sample data across the world (InterVISTAS (2006). The capitalism economic theory underpins the ex-ante empirical research study by Myburgh et al. (2006) titled "Clear skies over southern Africa". The research study examines the economic impacts of open skies agreements between South Africa and its neighbours in the Southern African Development Community (Myburgh et al., 2006). The ex-post empirical research study titled "Economic Effects of Air Transport Liberalisation in Africa" by Abate (2013) is underpinned by the capitalism economic theory. This research study examines the economic effects of international air transport service market liberalisation on twenty bilateral routes between Addis Ababa (Ethiopia) and other foreign cities in Africa (Abate, 2013). The ex-ante empirical research study titled "The Economic Impacts of Air Service Liberalisation" by InterVISTAS (2015) is underpinned by the capitalism economic theory. The research study updates the findings of the earlier study by (InterVISTAS (2006). The capitalism economic theory underpins the ex-ante empirical research study by InterVISTAS (2017) titled "Costs and Benefits of 'Open Skies' in the East African Community (EAC)". This research study examines the economic costs and benefits of open skies agreements between countries in the East African Community (EAC) (InterVISTAS, 2017).



Figure 1. Air Transport Liberalisation Model

Note. A diagram depicting a model of liberalisation in the air transport sector. Adapted from "Estimating the Economic Effects of Airline Deregulation," by T. Cetin and K. Y. Eryigit, 2018, *Journal of Transport Economics and Policy (JTEP), 52*(4), p. 410 (https://www.jstor.org/stable/pdf/90025143.pdf).

Theories Specific to the Research Study

Researchers develop theories to explain consistently recurring relationships between

international air transport service market liberalisation and other constructs in the international air transport service business environment. Specifically, the research study identifies theories that express relationships that link international air transport service market liberalisation to the demand and supply side variables of the international air transport service. These are theories that are based on the general proposition that international air transport service market liberalisation influences the demand and supply side variables of the international air transport service market liberalisation influences the demand and supply side variables of the international air transport service market liberalisation influences the demand and supply side variables of the international air transport service namely international air passenger volume, international air transport passenger airfare, and international passenger departure frequency. These theories support the research questions and hypotheses, and provide the framework of the econometric models employed to statistically estimate the economic impacts of international air transport service market liberalisation in the research study.

Figure 2 is a frame that

provides an insight on how the influence of international air transport service market liberalisation ripples through the supply side variables of the international air transport service namely international passenger airfare and international passenger departure frequency to international air passenger demand and other related variables of the international air transport service (InterVISTAS, 2006, 2009, 2014, 2015, 2017). According to InterVISTAS (2006, 2009, 2014, 2015, 2017), the removal of government protectionism and restrictions over international air transport service market competition generates impacts including new international air routes, higher international passenger departure frequency, shorter international air travel times, and lower international passenger departure frequency, international air travel times, and international passenger airfare promotes growth in international air passenger demand. Growth in international air passenger demand in turn advances international revenue passenger capacity utilisation. Growth in international air passenger demand also fosters creation of new jobs in the international air transport industry and related industries such as the travel and tourism industry (InterVISTAS, 2006, 2014, 2015, 2017).



Figure 2. Air Transport Liberalisation Impact Model

Note. A diagram depicting how the influence of liberalisation ripples through the demand and supply side to other related variables in the air transport sector, reprinted from "Transforming intra-African air connectivity: The economic benefits of implementing the Yamoussoukro Decision," by I. A. T. A. InterVISTAS, *InterVISTAS Consulting LTD Bath, England,* p. 26 (https://www.iata.org/contentassets/77c0831feaf64dc8b8782f11754f0a6c/intervistas_africalibera lisation_finalreport_july2014.pdf).

The research study establishes the significance of the magnitudes and statistics of the impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely international air passenger volume, international air transport passenger airfare, and international passenger departure frequency. The research study further identifies a function that expresses the relationships that links the direct

impact of international air transport service market liberalisation to jobs in the travel and tourism industry. These relationships are respectively defined by the theories below (Abate, 2013; Abate & Christidis, 2017, 2020; Grančay, 2009; InterVISTAS, 2006, 2015; Myburgh et al., 2006):

Theory of International Air Passenger Volume: The research study examines the impact of international air transport service market liberalisation on international air passenger volume in the Southern African Development Community through employing the theoretical model by InterVISTAS (2006, 2015). The theoretical model by InterVISTAS (2006, 2015) is flexible and rigorous, and can be applied for any international air transport market in the world. According to InterVISTAS (2006, 2015), international air transport service market liberalisation influences international passenger volume with all other factors kept constant. Therefore, the ceteris paribus relationship between international air transport service market liberalisation and international air passenger volume may mathematically be specified thus (InterVISTAS, 2006, 2014, 2015):

$$PassVol = f(Bilateral \ Indicator) \tag{1}$$

Where:

- PassVol is the international passenger volume of an airline operating on a specific international air transport market, and is the dependent variable of the model.
- Bilateral Indicator is the dummy variable that pertains to the regulatory status of the bilateral air service agreement over a specific international air transport market.

According to InterVISTAS (2006, 2009, 2014, 2015, 2017), however, it is worth noting that international air passenger volume is not only influenced by international air transport service market liberalisation, but also by geographical and socio-economic factors over a given international air transport market. Main geographical and socio-economic factors include distance

and gross domestic product (GDP) respectively. International air transport service market liberalisation is expressed as a bilateral indicator (dummy/binary) variable that indicates the liberal/restrictive status of a particular international air transport market. According to InterVISTAS (2006, 2014, 2015), the theoretical model for international air passenger volume may be defined thus:

$$PassVol = f(GDP \ Product, \ Distance, \ Bilateral \ Indicator)$$
(2)

Where:

- PassVol is the international passenger volume of an airline operating on a specific international air transport market, and is the dependent variable of the model.
- GDP Product is the socio-economic variable that pertains to the product of the GDPs (Gross Domestic Products) of the two separate member countries of a given international air transport market.
- Distance is the geographical variable that pertains to the Great Circle Distance between a particular state-pair, built on the coordinates of the respective states. Each state is regarded as a single point, usually represented by its primary international airport.
- Bilateral Indicator is the dummy variable that pertains to the regulatory status of the bilateral air service agreement over a specific international air transport market.

Theory of International Passenger Airfare: The research study examines the impact of international air transport service market liberalisation on international passenger airfare in the Southern African Development Community by applying a theoretical model by Myburgh et al. (2006). Myburgh et al. (2006) developed this theoretical model for the southern African context. According to Myburgh et al. (2006), keeping all other factors constant, international air transport

service market liberalisation influences international passenger airfare. Therefore, the ceteris paribus relationship between international air transport service market liberalisation and international passenger airfare may mathematically be defined as follows (Myburgh et al., 2006):

$$Airfare \ per \ Kilometer = f(Bilateral \ Indicators) \tag{3}$$

Where:

- Airfare per Kilometer is the international passenger airfare per kilometer on a specific international air transport market.
- Bilateral Indicator is the dummy variable that indicates the regulatory status of bilateral air service agreement over a particular international air transport market.

According to Myburgh et al. (2006), nevertheless, international passenger airfare is not only influenced by international air transport service market liberalisation, but also by geographical factors over a particular international air transport market. Key geographical factor is distance. International air transport service market liberalisation is expressed as a bilateral indicator variable that indicates the liberal/restrictive status of a particular international air transport market. According to Myburgh et al. (2006), the theoretical model for international passenger airfare may be specified thus:

$$Airfare \ per \ Kilometer = f(Distance, \ Bilateral \ Indicators)$$
(4)

Where:

- Airfare per Kilometer is the international passenger airfare per kilometer on a specific international air transport market.
- ◆ Distance is the Great Circle Distance expressed in kilometers between a given country-pair.
Bilateral Indicator is the dummy variable that indicates the regulatory status of bilateral air service agreement over a particular international air transport market.

Theory of International Passenger Departure Frequency: The research study investigates the impact of international air transport service market liberalisation on international air passenger departure frequency in the Southern African Development Community by applying a theoretical model by Abate (2013). Abate (2013) built this model for the African context. According to Abate (2013), international air transport service market liberalisation influences international air passenger departure frequency with all other factors kept constant. Therefore, the ceteris paribus relationship between international air transport service market liberalisation and international air passenger departure frequency may mathematically be specified as follows (Abate, 2013):

$$Frequency = f(Bilateral \ Indicator) \tag{5}$$

Where:

- Frequency is the international passenger departure frequency of an airline operating on a particular international air transport market, and is the dependent variable of the model.
- Bilateral Indicator is the dummy variable that indicates the regulatory status of the bilateral air service agreement over a given international air transport market.

According to Abate (2013), nonetheless, international air transport service market liberalisation is not the only factor that influences international air passenger departure frequency, but also other factors including distance, aircraft size, and number of airline operators over a particular international air transport market. International air transport service market liberalisation is expressed as a bilateral indicator variable that indicates the liberal/restrictive status of a given international air transport market. According to Abate (2013), the theoretical model for international air passenger departure frequency may be specified thus:

$$Frequency = f(Acsize, Distance, Operators, Bilateral Indicator)$$
(6)

Where:

- Frequency is the international passenger departure frequency of an airline operating on a particular international air transport market, and is the dependent variable of the model.
- Acsize (aircraft seat capacity) is the average number of seats per international passenger flight of an airline operating on a given international air transport market.
- Distance is the Great Circle Distance between the origin and the destination of a given international passenger flight.
- Operators are the number of airlines that operate on a particular international air transport market.
- Bilateral Indicator is the dummy variable that indicates the regulatory status of the bilateral air service agreement over a given international air transport market.

Theory of International Revenue Passenger Load Factor: The research study investigates the impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines in the Southern African Development Community by applying a theoretical model by Abate and Christidis (2017, 2020). Abate and Christidis (2017, 2020) developed this model for any international air transport service market. According to Abate and Christidis (2017, 2020), international air transport service market liberalisation influences international revenue passenger load factor with all other factors kept constant. Therefore, the ceteris paribus relationship between international air transport service market liberalisation and international revenue passenger load factor may mathematically be specified thus (Abate & Christidis, 2017, 2020):

$$RPLFactor = f(Bilateral \ Indicator) \tag{7}$$

Where:

- RPLFactor is the international revenue passenger load factor of an airline operating a certain international air transport market, and is the dependent variable of the model.
- Bilateral Indicator is the dummy variable that pertains to the regulatory status of the bilateral air service agreement over a specific international air transport market.

According to Abate and Christidis (2017, 2020), however, it is worth noting that international revenue passenger load factor is not only influenced by international air transport service market liberalisation, but also by other factors such as passenger volume and distance. International air transport service market liberalisation is expressed as a bilateral indicator variable that indicates the liberal/restrictive status of a particular international air transport market. According to Abate and Christidis (2017, 2020), the theoretical model for international revenue passenger load factor may be specified thus:

RPLFactor = f(Passenger Volume, Distance, Bilateral Indicator) (8)

Where:

- RPLFactor is the international revenue passenger load factor of an airline operating a certain international air transport market, and is the dependent variable of the model.
- Passenger Volume is the volume of international revenue passengers of an airline operating on a specific international air transport market.

- Distance is the geographical variable that pertains to the Great Circle Distance between a particular state-pair, built on the coordinates of the respective states. Each state is regarded as a single point, usually represented by its primary international airport.
- Bilateral Indicator is the dummy variable that pertains to the regulatory status of the bilateral air service agreement over a specific international air transport market.

Theory of Direct Impact on Jobs in the T&T Industry: The research study examines the direct impact of international air transport service market liberalisation on jobs in the travel and tourism (T&T) industry in the Southern African Development Community by applying the model by Myburgh et al. (2006). Myburgh et al. (2006) built the theoretical model for the southern African context. According to Myburgh et al. (2006), international air transport service market liberalisation influences direct jobs in the travel and tourism (T&T) industry with all other factors kept constant. Therefore, the ceteris paribus relationship between international air transport service market liberalisation and direct impact on jobs in the travel and tourism industry may mathematically be expressed as follows (Myburgh et al., 2006):

Direct Impact on Jobs = f(Average Impact of Liberalisation on Passenger Volumes) (9)

Where:

- Direct Impact on Jobs is the amount of change directly caused on jobs in the travel and tourism industry, and is the dependent variable of the model.
- Average Impact of Liberalisation on Passenger Volumes is the estimate of the average impact of liberalisation on international air passenger volumes.

However, it is worth noting that the direct impact on jobs in the travel and tourism industry is not only influenced by international air transport service market liberalisation, but also by other factors such as direct jobs in the T&T industry, and tourist spending as percentage of consumption in the T&T industry. According to Myburgh et al. (2006), the theoretical model for direct impact on jobs in the travel and tourism industry may mathematically be expressed as follows (Myburgh et al., 2006):

Direct Impact on Jobs = f(Direct Jobs in the Travel and Tourism Industry, Tourist Spending as % of Consumption in the Travel and Tourism Industry, Average Impact of Liberalisation on Passenger Volumes) (10)

Where:

- Direct Impact on Jobs is the amount of change directly caused on jobs in the travel and tourism industry, and is the dependent variable of the model.
- Direct Jobs in the Travel and Tourism Industry are direct jobs created in the in the T&T industry in a given country in the SADC.
- Tourist Spending is the tourist spending of tourists that travelled by air as a percentage of consumption in the SADC T&T industry.
- Average Impact of Liberalisation on Passenger Volumes is the estimate of the average impact of liberalisation on international air passenger volumes.

International Air Transport Service Market Liberalisation

Air transport started as a myth, the "Dream of Flying", which is as old as mankind. Since its emergence, mankind has sought its fundamental freedom to soar, and flying has generally symbolised human freedom. However, the reality of successful flight has only been experienced in the recent hundred years when the Wright brothers, Wilbur (1867–1912) and Orville (1871– 1948), developed the world's historical aeroplane in 1905. Organizations began to use air transport for air passenger and cargo services, and air transport has since incredibly become a popular mode of travel (InterVISTAS, 2006, 2015; Schmitt & Gollnick, 2015). Air transport shrinks time and space tremendously. Consequently, air transport has induced and stimulated more and more organizations and individuals to trot the globe, to access distinguished places, to access distinct products, and to improve their livelihoods on a global scale. Air transport has facilitated global economic integration by establishing an avenue to the world market for cross-border businesses. Air transport has also allowed industries and individuals to access far off regions for their development and expansion opportunities (Button, 2008; InterVISTAS, 2006, 2015).

technological advances in control systems and instrumentation, including integrated circuit (IC) electronics; the Global Positioning System (GPS); satellite based communication systems; big and miniaturized powerful computers; and light emitting diode (LED) displays, modern aeroplanes can sail and observe topography, obstacles, and other close by aeroplanes on a chart or via simulated vision in all types of environments (Schmitt & Gollnick, 2015). As a result, present-time aircraft can operate efficiently and safely throughout the world to areas under a broad spectrum of climates. With the modern nonstop ultra-range aircraft technologies, aircraft are also able to take any viable route to reach far off destinations, whether in the east across the Atlantic and far North, or in the west across the Pacific and eastern Asia. Above all, with the modern aerospace technologies, air travel cost has amazingly declined, thereby inducing and enticing more and more organizations and individuals to regard aviation as a routine mode of travel (Dobson, 2017).

Air transport service is one of the categories of flying, representing all non-military air transport, both private and commercial. Air transport service can be defined as commercial activities that are directly dependent upon transporting people and goods by air to, from or within a country, region or a continent. This includes airline and airport operations, and covers scheduled

With the application of modern

and charter flights, general aviation, airport maintenance, air traffic control and regulation. It also covers activities directly serving air passengers, such as check-in, baggage-handling, and on-site retailing and catering facilities (Forecasting, 2006). International air

transport service is one of the classes of air transport service, representing all commercial air transport service where a flight passes through the airspace over the territory of more than one country (Forecasting, 2006; ICAO, 2004; Moselle et al., 2002). Due to its international nature, international air transport service is contingent upon a heterogeneous economic regulatory framework that reflects government economic preferences and international air transport service agreements among nations. The economic regulatory framework reflects an understanding by states that there was need to furnish a structure for governing this exceptionally competitive international business. Therefore, commercial international air transport service is contingent upon a regulatory framework that governs international air transport service market competition between nations (InterVISTAS, 2006, 2015; International Transport Forum [ITF], 2019).

The International Civil Aviation Organization (ICAO), the agency of the United Nations on international air transport service, instituted an economic regulatory framework through the Chicago Convention on International Civil Aviation of 1944 to regulate international air transport service markets following misunderstandings over the degree of commercial air transport service between nations. The fundamental elements of this international air transport service market regulatory framework are bilateral air service agreements (BASAs). A bilateral air service agreement is negotiated by two states, and every provision of the international air transport service market regulatory framework is reflected in the bilateral air service agreement. Generally, provisions found in a BASA are grants of air traffic rights articles, authorised points articles, capacity articles, airfare articles, and designation articles (ICAO, 2004; InterVISTAS, 2006; Moselle et al., 2002).

The antiquated and arcane international air transport service market regulatory framework of a complex network of bilateral air service agreements created by the Chicago Convention creates an environment that restricts international air transport service market access and entry. It creates an environment that shields local national airlines from foreign competition through imposing restrictive and protectionist machinery that oppresses international air transport service market competition. However, this obsolete and clandestine regulatory framework of protectionist bilateral air service agreements frustrates and prohibits innovation, investment and growth in international air transport service markets. The result has been airlines that hardly improve consumer welfare, and even scarcely provide willing and capable passengers with distinct air services (InterVISTAS, 2006, 2015; ITF, 2019). Of late,

international air transport service markets are witnessing a profound evolution of economic governance regimes in developed as well as emerging economies. Both internal and external factors are influencing national governments to liberalise international air transport service markets. The international air transport service markets are shifting towards liberalisation, where government jurisdiction over international air transport service market competition is universally dying out. International air transport service market liberalisation replaces the restrictive and arcane international air transport service market regulation as an economic regulatory framework.

market liberalisation may be understood as the removal of government protectionism and restrictions over international air transport service market competition and pricing. It is the removal of government authority over the provisions found in an international air transport service market agreement such as grants of air traffic rights articles, authorized points articles, capacity

International air transport service

articles, airfare articles, and designation articles. It is the liberalisation of the determination of international airfares, international frequencies, international capacities, international air routes, and international air transport service market access and entry. International air transport service market liberalisation mitigates the challenges brought about by the antiquated and arcane international air transport service market regulatory framework (Button, 2008; Gudmundsson, 2011; ITF, 2019; Schlumberger, 2010; Vietor et al., 2000).

Economic Impacts of International Air Transport Service Market Liberalisation

International air transport service market liberalisation has been advocated by many as the panacea to the economic challenges facing the international air transport service. Optimists of international air transport service market liberalisation believe that liberalisation is the right direction to the promotion of the international air transport service and the enhancement of consumer welfare through the reduction of international passenger airfares. They believe that liberalisation is the right direction for the international commercial air transport service to benefit the most out of the global air transport service market. Optimists of international air transport service market liberalisation also argue that liberalisation brings about enormous benefits, though hardly identified and appreciated by organizations and individuals as they are distributed so widely throughout the entire economy. Besides the international air transport service, industries in the wider economy, for instance, tourism; trade; and manufacturing industries, enormously benefit from reduction of international air transport service airfares and improvement of international air transport service quality, which largely are the consequence of the competition attributed to the liberalisation of international air transport service markets (Fu et al, 2010; Goetz & Dempsey, 1988; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Surovitskikh & Lubbe, 2015; Vietor et al.,

However, pessimists

of international air transport service market liberalisation argue that liberalisation rather fosters defeatist economic impacts on the international air transport service in some economies. They claim that international air transport service market liberalisation may have been great for the international air transport service in developed economies, but not in emerging economies. They are of the perspective that international air transport service market liberalisation rather encourages economic gaps in the industry through fostering the dominant role of monopoles in the international air transport service industry. Pessimists of international air transport service market liberalisation and competitive forces that have the potential to promote monopolistic behaviour in the international air transport service market (Fu et al., 2010; Goetz & Dempsey, 1988; Monsod, 2000; Socha et al., n.d.; Vietor et al., 2000).

have conducted empirical research to investigate the economic impacts of international air transport service market liberalisation on the international air transport service. The current research study explores empirical literature that examines the economic impacts of international air transport service market liberalisation on the international air transport service to support the research problem statement, the research purpose statement, the research questions, and the research hypotheses. The research study explores empirical literature that employs data generated across the world to investigate beneficial and defeatist economic impacts of international air transport service. It also explores empirical literature that uses data generated in the United States and the European Union to examine the economic impacts of international air transport service market liberalisation on the international air transport service. The search uses data generated in the United States and the European Union to examine the economic impacts of international air transport service market liberalisation on the united States and the European Union to examine the economic impacts of international air transport service market liberalisation on the united States and the European Union to examine the economic impacts of international air transport service market liberalisation on the united States and the European Union to examine the economic impacts of international air transport service market liberalisation on the intern

research study also explores empirical research studies that use data generated in the African Union and the Southern African Development Community to examine the economic impacts of international air transport service market liberalisation on the international air transport service in the African Union and the Southern African Development Community respectively. In each case, the research study explores empirical studies that examine the impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely air passenger volume, passenger airfare, passenger departure frequency, and revenue passenger load factor. In each case, the research study also explores empirical studies that investigate the impacts of international air transport service market liberalisation on employment. Empirical research studies on the developed economies, the United States and the European Union, provide a source of comparative material between the developed economies and the African Union.

Economic Impacts of International Air Transport Service Market Liberalisation: Global Evidence

The global nature of this evidence depends on the employment of data generated throughout the world. The current research study is interested in global empirical studies that investigate the beneficial and defeatist impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor employing data generated throughout the world. The current research study is also interested in global empirical studies that examine beneficial and defeatist impacts of international air transport service market liberalisation on employment in the world.

International Air Transport Service Market Liberalisation on International Air Passenger **Volume:** InterVISTAS (2006) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through a research study on the economic impacts of air transport service liberalisation (InterVISTAS, 2006). InterVISTAS (2006) conducts a research study that employs data generated throughout the world, involving over 190 nations and 1,400 international air transport service markets over the world. InterVISTAS (2006) finds that international air passenger volume between countries grew from 12% to 100% upon removing government protectionism and restrictions over international air transport service market competition. Through the simulation of international open skies across 320 international air passenger service markets across the globe, InterVISTAS (2006) finds that the global air passenger volume would grow by as high as 63%. This is remarkably greater than the increase of 6% to 8% in global air passenger volume in 2006 (InterVISTAS, 2006). International Civil Aviation Organisation Secretariat (Secretariat, 2007) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through a worldwide overview of international air transport service market liberalisation trends experienced since the 1990s. Secretariat (2007) finds that the liberal reforms made in the regulation of international air transport service market access and entry in the 1990s significantly contributed to the enhancement of international air passenger demand. The total number of international air passengers grew from 1,457,000,000 passengers to 2,128,000,000 passengers per annum, representing an annual increase of 46% in global air passenger volume (Secretariat, 2007).

Piermartini and Fache Rousová (2008) establish that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through a research study on the effects of international air

transport service market liberalisation on international air passenger demand. Piermartini and Fache Rousová (2008) conduct a research study that uses data compiled throughout the world, involving 184 states over the globe. Piermartini and Fache Rousová (2008) find that international air passenger volume grew by 30% upon liberalising international air transport service markets. These findings were applicable to a wide spectrum of the extent of the liberalisation of the international air transport service markets (Piermartini & Fache Rousová, 2008).

Through updating the findings of the earlier research study on the economic impacts of air transport service liberalisation (InterVISTAS, 2006), InterVISTAS (2015) establishes whether the impact of international air transport service market liberalisation on international air passenger volume changed over the period 2006 to 2015. InterVISTAS (2015) finds that the impact of international air transport service market liberalisation on international air passenger volume was not significantly different from that established by InterVISTAS (2006). Global international air passenger volume consistently grew from 18% to 75% (InterVISTAS, 2015). Therefore, InterVISTAS (2015) establishes that the impact of international air transport service market liberalisation on international air transport service market service (InterVISTAS, 2015).

International Air Transport Service Market Liberalisation on International Passenger Airfare: Gönenç and Nicoletti (2000) establish that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service. Gönenç and Nicoletti (2000) conduct a research study employing data generated by intercontinental carriers from 27 states under the Organization for Economic Cooperation and Development (OECD to investigate the economic impact of international air transport service market liberalisation on international passenger airfares. Gönenç and Nicoletti (2000) find that airfares were between 20% and 40% lower than expected levels in liberalised international air transport service markets, while in restricted international air transport service markets, airfares were 20% above their expected levels (Gönenç &Nicoletti, 2000).

Doove (2001) establishes that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service through a study on the effects of the liberalisation of international air transport service markets on airfares. Doove (2001) conducts a research study employing data generated by intercontinental carriers from 35 OECD and non-OECD states in the world. Doove (2001) finds that international air transport service market liberalisation facilitated the decrease of international passenger airfare from 22% to 3% in the 35 OECD and non-OECD countries (Doove, 2001). Impacts of

International Air Transport Service Market Liberalisation on International Passenger Load Factor: International Civil Aviation Organization Secretariat (Secretariat, 2007) establishes that the impact of international air transport service market liberalisation on international revenue passenger load factor is beneficial for the international air transport service through a worldwide overview of international air transport service market liberalization trends experienced since the 1990s. Secretariat (2007) finds that the liberal reforms made in the regulation of international air transport service market access and entry in the 1990s fostered increase in revenue passenger kilometers (RPKs) by 49% in 2006 as compared to 20% in 1995 and 42% in 2000 (Secretariat,

Market Liberalisation on Employment: Through a research study on the economic impacts of air transport service liberalisation, InterVISTAS (2006) establishes that the impact of international air transport service market liberalisation on employment is beneficial for the international air transport service. Through the simulation of international open skies across 320 international air passenger service markets across the world, InterVISTAS (2006) finds that the

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2007).

global employment would grow by 24.1 million full-time jobs (InterVISTAS, 2006).

Air Transport Action Group Aviation (Aviation, 2014) establishes that the impact of international air transport service market liberalisation on employment is beneficial for the international air transport service sector and related industries (Aviation, 2014). Aviation (2014) finds that 8.7 million direct jobs were created in the international airline industry worldwide. Aviation (2014) also reveals that a total of 58 million jobs were created in the international airline sector and related industries globally (Aviation, 2014).

Economic Impacts of International Air Transport Service Market Liberalisation: Evidence from the United States

Despite being the largest air transport service market in the world, the United States is the first developed economy in the world ever to champion and make a bold decision to deregulate the airline industry, and open her skies to the global air transport service market competition. The experiences of the United States and the European Union have influenced international endeavours to promote competition in the international air transport service market through deregulation and liberalisation respectively. However, the United States and the European Union adopt different approaches to promoting competition in the international air transport service market. The United States employs a bilateral deregulation approach to promoting international air transport service market competition, while the European Union employs a plurilateral liberalisation approach (Butcher, 2010; Cook, 1996).

United States: The United States air transport service industry has transformed and grown exponentially since its humble beginning in 1914. The astronomical growth has made the United States air transport service industry the biggest globally. Just like any other industry, the United States air transport service industry has evolved through a convoluted experience of regulation and

deregulation (Cook, 1996). The United States Federal Government mandated the Post Office in 1918 to administer airmail routes served by the US Army aircraft. However, in 1925, Congress approved the first airline regulation in the form of the Contract Air Mail Act, allowing the Post Office to grant airmail routes to private air carriers. In 1926, Congress passed the Air Commerce Act as a supplementary federal regulation to assemble inter alia navigational facilities, airmen, aircraft, and air traffic regulations. Specifically, the Air Commerce Act demanded regular inspection of aircraft, and display of aircraft markings for identification. The Act also demanded regular tests of pilots on physical fitness, aeronautical knowledge, and on ability to undertake a flight. Under the Air Commerce Act, the federal government was de jure responsible for the promotion of commercial air service, establishment of airways and aeronautical navigation aids, and enforcement of safety standards and recommended practices (Cook, 1996; Heppenheimer, 1995). In 1938, Congress passed the Civil Aeronautics Act, which eventually shifted jurisdiction over commercial air service to the Civil Aeronautics Board (CAB). The 1938 Act instructed CAB to create regulations that would advance an efficient, safe, and cost effective air service system, free of unjust or catastrophic competition. Consequently, the Civil Aeronautics Board was responsible for awarding routes, limiting entry into new markets, regulating flight schedules, and regulating airfares. Nevertheless, the Civil Aeronautics Board's disinclination to competition apparently triggered calls for regulatory reforms (Cook, 1996; Heppenheimer, 1995).

The propulsion for regulatory reforms emerged in the 1970s, and what might be the biggest United States regulatory transformation transpired in the form of the Airline Deregulation Act in 1978. Congress passed the Airline Deregulation Act (ADA) in order to substantially liberate the air transport service industry in the United States. The Airline Deregulation Act stopped the Civil Aeronautics Board (CAB) from controlling the determination of airfares, flight schedules,

airways, and market entries, and by 1984, the Civil Aeronautics Board was completely dead. Eventually, airlines were able to expand their numbers of airways, determine competitive airfares, and participate freely in any foreign air transport service markets (Cook, 1996). Nevertheless, the Airline Deregulation Act does not absolutely delink the airlines from the United States Federal Government grip. The Federal Aviation Administration (FAA) de jure continues to regulate aviation safety. For instance, the Federal Government continues to demand regular tests of pilots on physical fitness. The Government still demands that pilots and flight attendants be knowledgeable on current aeronautical safety and emergency response features of their particular aircraft. The Federal Government is also still de jure responsible for regular inspection of aircraft, and ensuring that aircraft display their markings for identification (Borenstein, 1992; Cook, 1996; Levine, 1987). With the removal of

government jurisdiction over the determination of airfare and market access and entry, all optimists of airline deregulation unanimously forecast higher savings for consumers. They contend that regulation limits airfare competition among airlines, which eventually resulted in overcapacity in the 1970s. However, the airline deregulation proponents do not agree in unison on the possible impact that airline deregulation may have on air transport service industry structure. Nonetheless, contrary minds argue that, with an attendant growth in concentration, airline regulation restrains major carriers from crushing any new daring entrants (Cook, 1996; Borenstein, 1992).

Since Congress and President Jimmy Carter approved and signed the Airline Deregulation Act into law in 1978 respectively, an incredible amount of research has been undertaken on the impacts of airline deregulation on the international air transport service in the United States (Boote & Beile, 2005; Hart, 2018; Randolph, 2009). The current research study explores empirical research studies that investigate economic impacts of airline deregulation on the international air transport service employing data generated in the United States. The research study explores empirical studies that examine beneficial and defeatist impacts of airline deregulation on the demand and supply side variables of the international air transport service namely international air passenger volume; international passenger airfare; international passenger departure frequency; and international revenue passenger load factor in the United States. The current research study also explores empirical studies that examine the impacts of airline deregulation on employment in the international air transport service and related industries in the United States.

Impacts of Airline Deregulation on International Air Passenger Volume: Through an investigation into the consequences of the 1978 Airline Deregulation Act on the air transport service industry in the United States, Katz (1988) establishes that the impact of airline deregulation on international air passenger volume is beneficial for the international air transport service. Upon Congress passing the Deregulation Act, the Civil Aeronautics Board (CAB) fully implemented the provisions of the Act, and hastened the proliferation of new entrants and rapid expansion of incumbent carriers followed. Katz (1988) finds that scheduled airlines enplaned 240 million passengers in 1977, while in 1987, the scheduled airlines enplaned 447 million passengers (Katz, 1988).

Barber (1991) establish that the impact of airline deregulation on international air passenger volume is defeatist for the international air transport service through their research study on the volatility of traffic experienced by airports in the United States during twenty-five years of airline post-deregulation. In their study, de Neufville and Barber (1991) find that deregulation induced volatility in airport traffic in the United States. They find that the volatility of airport traffic prior to airline deregulation averaged 4.15, while after deregulation the volatility increased to 12 on

average. This shows that as airport traffic grew during the pre-deregulation era, its variance from the normal trend varied to over +/-4%, while over the post-deregulation period, its variance increased to +/-12% from the normal trend. The increase in volatility over the post-deregulation period reveals that airline deregulation induced immense air traffic at the airports in the United States (de Neufville & Barber, 1991). Through an investigation into the consequences of liberalising cabotage in the United States, Button (1998) establishes that the impact of airline deregulation on international air passenger volume is beneficial for the international air transport service. Button (1998) finds that the deregulation of cabotage facilitated the growth of total passengers ferried from 275 million in 1978 to 600 million in 1998 (Button, 1998). Robson (1998) establishes that the impact of

airline deregulation on international air passenger volume is beneficial for the international air transport service. Robson (1998) finds that 275 million passengers were ferried on the US airlines in 1978, and the number more than doubled to 600 million passengers in 1997. Robson (1998) finds that 740 million passengers would be ferried on the US carriers by 2002, and more than 900 million by 2005 (Robson, 1998). Through a research study on the impacts of the United States 1978 Airline Deregulation Act, Goetz and Vowles (2009) establish that the impact of airline deregulation on international air passenger volume is beneficial for the international air transport service. Goetz and Vowles (2009) find that the US 1978 Airline Deregulation Act generally increased the number of passengers flying on US airlines tripling from approximately 275 million in 1978 to nearly 750 million in 2006 (Goetz & Vowles, 2009).

Borenstein and Rose (2014) establish that the impact of airline deregulation on international air passenger volume is beneficial for the international air transport service through a study on the consequences of the 1978 Airline Deregulation Act on the economic performance of passenger air transport service markets in the United States. Borenstein and Rose (2014) find that air passenger volumes increased at a yearly rate of 2.4% over the period 1978 to 1988 (Borenstein & Rose, 2014).

Impacts of Airline Deregulation on International Passenger Airfare: Carstensen (1989) establishes that the impact of airline deregulation on international passenger airfare is defeatist for the international air transport service through a study on the implications of the removal of the government regulatory authority over the determination of airfares, route, market access and entry in the United States (Carstensen, 1989).

Carstensen (1989) finds that the deregulation of the determination of airfares was justified by inter alia three core assumptions. The first assumption was premised on the perspective that commercial air transport service was inherently an enormously competitive business, and therefore, uncontrolled airfares would approximately match costs. The second assumption was founded on the view that all passengers would enjoy low airfares since airfares would approximately be even. The third assumption was premised on the reasoning that as long as the safety regulatory system crafted by the Federal Aviation Administration (FAA) was intact, the safety incentives of airlines would also be intact (Carstensen, 1989).

Carstensen (1989) finds that the assumption that the commercial air transport service could inherently be a competitive industry was invalid. Though the extent of competitiveness in the commercial air transport service business depended on the entire regulatory system, standard deregulation neither recognized nor provided careful regulation of important conditions of the airline business in order to preserve competition over a certain period. There was no single airline that was interested in advancing unlimited competition, and therefore, major airlines that had strong incentives frustrated competition by exploiting the deregulated framework. Competitive potential of the airline business could be achieved and maintained through sensitive and responsive regulation of the deregulated environment. Carstensen (1989) also finds that there were several additional factors that affected the contestability of the air transport service markets. Those factors included airline reputation, loyalty of agents to a particular airline, access to information and customers, and investment in local facilities such as gates and baggage facilities. Therefore, Carstensen (1989) concludes that the assumption that the commercial transport business is inherently competitive was invalid (Carstensen, 1989).

study, Carstensen (1989) find that the assumption that airfares would uniformly be low across the air transport service market was invalid. Carstensen (1989) finds that the deregulation pricing model assumed easy contestability among airlines because of the assumed non-feasibility of exclusionary and exploitative pricing during post-deregulation. However, if deemed economically rational, airlines were free to conduct business strategically by excluding their competitors in order to increase their incontestability. Thus, Carstensen (1989) finds that both exclusionary and exploitative pricing approaches were feasible and, therefore, the assumption of uniform pricing during post-deregulation was invalid (Carstensen, 1989). The assumption that the safety incentives of airlines during the pre-deregulation era would remain following the elimination of public control over passenger airfare was also invalid. During the post-deregulation era, airfares and profits were no longer regulated, a development that directly affected airline investment in safety incentives. Airlines faced competitive pressures, and consequently could be influenced to divert funds meant for excess safety incentive investment into profits. Competitive pressures on airlines could also well enhance the depletion of overall earnings, a development that, in turn, could generate extra incentives to ignore investments deemed to be of less priority at that particular time. Thus, Carstensen (1989) concludes that the assumption that pre-deregulation safety incentive

investment would be maintained was invalid (Carstensen, 1989).

Therefore, the study by Carstensen (1989) shows that the invalidity of these assumptions renders the economic impact of airline deregulation on international passenger airfare defeatist for the international air transport service (Carstensen, 1989).

Keeler (1991) establishes that the impact of airline deregulation on international passenger airfare is beneficial for the international air transport service through a study on the economic basis for regulatory reform in the United States. Keeler (1991) finds that the deregulated airfare on selected 100 routes averaged 20% lower than the restricted airfare would be in the United States in 1981 (Keeler, 1991).

Through an investigation into the economic impact of air service market deregulation on airfares in the United States airline industry, Morrison and Winston (1995) establish that the impact of airline deregulation on international passenger airfare is beneficial for the international air transport service. Morrison and Winston (1995) find that Open Skies air transport service market deregulation caused a sharp decrease in passenger airfare by 30% relative to airfares in restrictive air transport service market environments elsewhere (Morrison & Winston, 1995). Through an investigation into the consequences of liberalising cabotage in the United States, Button (1998) establishes that the impact of airline deregulation on international passenger airfare is beneficial for the international air transport service. Button (1998) finds that airfares were more than 20% lower in real terms since the 1978 deregulation of cabotage (Button, 1998).

Robson (1998) establishes that the impact of airline deregulation on international passenger airfare is beneficial for the international air transport service. Robson (1998) finds that airfares were 22% lower in 1998 than they would be if airfare determination was under government control (Robson, 1998). Through an investigation into the consequences of deregulating the aviation industry in the United States, Scharpenseel (2001) establishes that the impact of airline deregulation on international passenger airfare is beneficial for the international air transport service. Scharpenseel (2001) finds that the average airfare during the post-deregulation era was 40% lower in real terms than during the pre-deregulation era (Scharpenseel, 2001).

In 2009, thirty years after the enactment of the Airline Deregulation Act in the United States, Goetz and Vowles (2009) establish that the impact of airline deregulation on international passenger airfare is beneficial for the international air transport service through a study on the impacts of the United States Airline Deregulation Act. Goetz and Vowles (2009) find that the average airfare continued to trend downward from approximately 300 US\$ in 1993 to around 210 US\$ in 2007 (Goetz & Vowles, 2009).

However, through a study on the good, the bad, and the ugly sides of airline deregulation in the United States, Goetz and Vowles (2009) establish that the impact of airline deregulation on international passenger airfare is defeatist for the international air transport service. Goetz and Vowles (2009) acknowledge plausible consequences of airline deregulation such as increased volumes of passengers, increased air transport service to major hubs, and reduced airfares. However, Goetz and Vowles (2009) find that the deregulation of airfares advanced defeatist implications such exorbitant airfares to small communities. They also find that the deregulation of airfares promoted the bankruptcy and the loss of some renowned carriers including the United, Delta, Northwest, and the US Airways (Goetz & Vowles, 2009).

Borenstein and Rose (2014) establish that the impact of airline deregulation on international passenger airfare is beneficial for the international air transport service through a study on the consequences of airline deregulation on the economic performance of air transport service markets in the United States. Borenstein and Rose (2014) find that airfares reduced and air traffic volumes increased concomitantly. In their findings, Borenstein and Rose (2014) confirm that airfares in 2011 were 26% lower than in 1978 (Borenstein & Rose, 2014).

Impacts of Airline Deregulation on International Passenger Departure Frequency: Goetz and Dempsey (1988) establish that the impact of airline deregulation on international passenger departure frequency is beneficial as well as detrimental for the international air transport service through a study on the implications of the deregulation of the airline industry on the plight of passengers in the United States. Goetz and Dempsey (1988) find that the deregulation of frequency increased the departures of main airlines by 27 percent. However, Goetz and Dempsey (1988) find that the deregulation of flight frequency induced unpredictability in air transport service quality. Any carrier that was deemed qualified, able and eager could serve any route as the government no longer regulated the award of routes during the post-deregulation period. Therefore, non-hub communities experienced unprecedented declines in flight frequencies. For example, of all departures, Goetz and Dempsey (1988) find that non-hubs shared 23 percent in 1978, and in 1987, the figure declined to 16 percent. Out of 515 non-hub communities served in 1978, approximately 61 percent had declines in flight frequencies, while about 28 percent completely lost air services by 1987. As a result, low airfares were discriminately enjoyed in major hub markets where airfare competition was intense. During the period 1978 to 1988, as an example, airfares grew to as high as 300 percent in some non-hub communities (Goetz & Dempsey, 1988).

Button (1998) establishes that the impact of

airline deregulation on international passenger departure frequency is beneficial for the international air transport service through a study on the consequences of liberalising cabotage in the United States. Button (1998) finds that passenger departure frequency rose by 55 percent during the post-deregulation era (Button, 1998).

Robson (1998) establishes that the impact of airline deregulation on international passenger departure frequency is beneficial for the international air transport service. Robson (1998) finds that passenger departure frequencies in 1995 were up by 50 percent for small airports, 57 percent for midsized ones, and 68 percent for large ones, compared to 1978 (Robson, 1998).

Through an investigation into the consequences of deregulating the aviation industry in the United States, Scharpenseel (2001) establishes that the impact of airline deregulation on international passenger departure frequency is beneficial for the international air transport service. Scharpenseel (2001) finds that passenger departure frequencies went up from 250 million in 1978 to 670 million in 2000 in the United States (Scharpenseel, 2001).

Goetz and Vowles (2009) establish that the impact of airline deregulation on international passenger departure frequency is beneficial as well as detrimental for the international air transport service through a study on the implications of the deregulation of the airline industry. Goetz and Vowles (2009) find that the number of flight departures increased over twofold from 5 million in 1978 to over 11 million in 2006. However, despite this beneficial effect on flight departures, there was some deterrent effect associated with the deregulation of passenger departure frequency. Goetz and Vowles (2009) find that the deregulation of frequency encouraged discrimination. Flight frequencies in shorter-distance and less-traveled city-pair markets were not as good as those in longer-distance and heavily-trafficked markets (Goetz & Vowles, 2009).

Impacts of Airline Deregulation on International

Revenue Passenger Load Factor: In her study, Bailey (1985) establishes that the impact of airline deregulation on international revenue passenger load factor is beneficial for the international air transport service. Bailey (1985) finds that load factors rose with distance as theory would predict during the post-deregulation era, and the load factors were in the range of 60 to 70

percent (Bailey, 1985). Through an investigation into the consequences of the 1978 Airline Deregulation Act on the air transport service industry in the United States, Katz (1988) establishes that the impact of airline deregulation on international revenue passenger load factor is beneficial for the international air transport service. Katz (1988) finds that scheduled airlines gained 193 billion revenue passenger load factors in 1977, while in 1977, the airlines gained 404 billion revenue passenger load factors (Katz, 1988).

Button (1998) establishes that the impact of airline deregulation on international revenue passenger load factor is beneficial for the international air transport service through an investigation into the consequences of liberalising cabotage in the United States. Button (1998) finds that scheduled revenue passenger load factors grew by over 60% (Button, 1998).

Impacts of Airline Deregulation on Employment: Katz (1988) establishes that the impact of airline deregulation on employment is beneficial for the international air transport service through an investigation into the consequences of the 1978 Airline Deregulation Act on the air transport service industry in the United States. Katz (1988) finds that the level of employment was reasonably constant over the early years of post-regulation, and thereafter increased exponentially. In 1977, total employment among scheduled airlines was 308,068 jobs, while it was 329,303 jobs in 1978, and in 1980, employment rose to 360,517. The employment level rose to 457,349 in 1987, about 50% greater than in 1977 (Katz, 1988).

Through an investigation into the consequences of liberalising cabotage in the United States, Button (1998) establishes that the impact of airline deregulation on employment is beneficial for the international air transport service. Button (1998) finds that employment in the airline industry increased by 32 percent (Button, 1998).

Robson (1998) establishes that the impact of airline deregulation on employment is

beneficial for the international air transport service. Robson (1998) finds that 530,000 Americans were directly employed by the United States airlines, a 50% increase since 1978 (Robson, 1998).

Card and Saunders (1998) establish that the impact of airline deregulation on employment is detrimental for the international air transport service through a study on the consequences of the deregulation of the United States airline industry on the wage structure of the industry. Specifically, Card and Saunders (1998) investigate the extent to which the deregulation of the airline industry affected the wages of workers in the air transport service industry in the United States. They also assessed the degree to which airline deregulation affected wage dispersion in the industry. In the study, Card and Saunders (1998) find that relative wages of employees in the air transport service industry dropped by 10%, and these declines remained similar for almost all occupations since 1978. Card and Saunders (1998) also discover that wage dispersion in the air transport service industry widened during the post-deregulation era. They also find that there were a number of employees who lost jobs in the US air transport service industry over the 1980s. Therefore, Card and Saunders (1998) conclude that the impact of airline deregulation is defeatist for the wages of employees in the airline industry (Card & Saunders, 1998).

Through a study on the implications of the deregulation of the airline industry, Goetz and Vowles (2009) establish that the impact of airline deregulation on employment is detrimental for the international air transport service. Goetz and Vowles (2009) find that the deregulation of the United States air transport service industry promoted unemployment through triggering bankruptcy and loss of carriers such the United, Delta, Northwest, and the US Airways in the United States (Goetz & Vowles, 2009).

Economic Impacts of International Air Transport Service Market Liberalisation: Evidence from the European Union

The European Union is the largest intra-continental domestic commercial air transport service market in the world. The European Union has influenced international endeavours to promote competition in the international air transport service market through liberalisation. Unlike the United States which employs a bilateral deregulation approach to promoting international air transport service market competition, the European Union employs a plurilateral liberalisation approach (Butcher, 2010; Cook, 1996). International

Air Transport Market Liberalisation in the European Union: In 1992, the Council of Ministers of the European Union endorsed the Third Aviation Liberalisation Package for the Region. The Third Package is the continuation of a stepwise process of the intra-European Union air transport service market liberalisation, to which members of the European Union dedicated themselves in the 1980s. The creation of a European single domestic air transport service market is a component of the Single European Act that establishes the European single domestic market for all economic activities in Europe (Butcher, 2010). As the above implies, the European Union earlier on adopted two aviation liberalisation packages. The First Package was endorsed in 1987, while the Second Package was endorsed in 1990. Before liberalisation, intra-European Union air transport service market was regulated by a network of complex international air transport service agreements between country-pairs. These agreements constrained the determination of capacity, the designation of routes, and the setting of airfares. Mostly, one airline only (single designation) from either of the country-pair members was granted permission to operate on an international route between the country-pair. Airlines could set airfares unless by agreement between the airlines. However, the United Kingdom and the Benelux states were the first nations in Europe to liberalise bilateral air transport service agreements in 1985. These liberal bilateral air transport service agreements promoted competition and the reduction of airfares. The liberal bilateral air transport service agreements between the United Kingdom and the Benelux states served as a model for Europe's First Aviation Liberalisation Package in 1986 (Butcher, 2010).

Endorsed in 1987, the First Aviation Liberalisation Package eases some elements of bilateral air transport service agreements in Europe, though essential elements of the agreements remain restrictive. The First Package allows multiple airlines to operate on main international routes across the European Union; grants airlines a certain extent of freedom to determine capacity; grants airlines a certain degree of freedom to operate 5th freedom rights; and grants airlines the freedom to set economic airfares. Nevertheless, the time-limited First Package was reviewed and transformed into the Second Aviation Liberalisation Package in 1990 (Butcher, 2010).

Endorsed in 1990, the Second Aviation Liberalisation Package liberalises regulations on the determination of airfares, and access and entry into foreign air transport service markets. The Second Package introduces the provision of double disapproval for airfare increments above 5%; opens up routes between airports across nearly the entire European Community; grants airlines the freedom to operate 5th freedom rights; and grants country-pairs the freedom to designate several airlines on certain routes (Butcher, 2010). However, it is

the 1992 Third Aviation Liberalisation Package that achieves a substantially liberalised European single domestic air transport service market. The Third Package, nonetheless, introduces regulations that directly affect national legislations, and therefore, states had to introduce changes to legislations that conflicted with the Package (Butcher, 2010).

Since the European Union adopted the First Package in December 1987, extensive research has been undertaken on the impacts of international air transport service market liberalisation on the international air transport service in the European Union (Brattle Group, 2002; Finland, 2003; Booz Allen Hamilton Limited, 2007). The current research study explores empirical research studies that investigate beneficial and defeatist economic impacts of international air transport service market liberalisation on the international air transport service employing data generated in the European Union. The research study explores empirical studies that examine beneficial and defeatist economic impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely international air passenger volume; international passenger airfare; international passenger departure frequency; and international revenue passenger load factor using data generated in the European Union. The research study also explores empirical studies that investigate beneficial and defeatist impacts of international air transport service market liberalisation on employment in the international air transport service and related industries in the European Union.

Impacts of International Air Transport Service Market Liberalisation on International

Air Passenger Volume: Through an investigation into the consequences of international air transport service market liberalisation in the European Union, Scharpenseel (2001) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service. Scharpenseel (2001) finds that the number of scheduled international air passengers grew to 71% in 1995 from 61% in 1985 as a result of international air transport service market liberalisation (Scharpenseel, 2001).

impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through an examination of the effects of international air service market liberalisation in the United Kingdom. Authority (2004) finds that international air transport service market liberalisation promoted international air passenger

Authority (2004) establishes that the

volumes by 87% in the United Kingdom during the international air service market liberalisation era (Authority, 2004). There has been a steady evolution of international air transport service market liberalisation over the past decades. However, Gaspari (2011) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial as well as defeatist for the international air transport service through a study on the implications of international air transport service market liberalisation in the European Union. In this investigation, Gaspari (2011) acknowledges that international air transport service market liberalisation promoted international air passenger volume through passenger airfare reduction. However, Gaspari (2011) finds that enormous international air passenger volumes in turn caused airspace congestion that eventually generated passenger flight departure delays at European airports (Gaspari, 2011).

Through a research study on the economic impacts of international air service market liberalisation on the international airline industry, Mojsoski (2014) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service. Mojsoski (2014) finds that the European Single Aviation Market generated an increase of 44 million international air passengers, or more than 33% as opposed to 4-6% annual growth of air passengers in the EU internal market. Mojsoski (2014) finds that international air passengers between the EU and other countries grew to 176 million passengers as opposed to 123.4 million passengers in 1993. Mojsoski (2014) further finds that international air passengers between Australia and New Zealand traffic were 56% higher than they would have been without liberalisation, and the total number of international air passengers grew by over 1.7 million passengers annually by 2005 (Mojsoski, 2014).

Impacts of International Air

Transport Service Market Liberalisation on International Passenger Airfare: Through an

investigation into the effects of intra-European Union air transport service market liberalisation on airfare, Betancor and Campos (2000) establish that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service. In the study, Betancor and Campos (2000) find that the basic international passenger airfare reduced by approximately 7% on liberalised routes in the European Union (Betancor & Campos, 2000). Finland (2003) establishes that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service through a study on the benefits of intra-European Union single air transport service market. In the study, Finland (2003) finds that the European Union single air transport service market reduced intra-EU passenger airfares by 30 percent (Finland, 2003).

Impacts of International Air Transport Service Market Liberalisation on International Passenger Departure Frequency: Through a study on the benefits of intra-European Union single air transport service market, Finland (2003) establishes that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service. In the study, Finland (2003) finds that scheduled flights at national level increased by 49%, whereas at international level, scheduled flights increased by 88% within the European Union (Finland, 2003). Through а study on the effects of the liberalised intra-European Union air transport service market, Burghouwt et al. (2015) establish that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service. In the study, Burghouwt et al. (2015) discover that the opening up of the intra-European Union air transport service market promoted international passenger departure frequency by 80% over the period 1990-2013 across the European Union region (Burghouwt et al., 2015). of Impacts

International Air Transport Service Market Liberalisation on International Revenue Passenger Load Factor: Commission of the European Communities (1996) establishes that the impact of international air transport service market liberalisation on international revenue passenger load factor is beneficial for the international air transport service through an investigation into the effects of the Third Package of the international air service market liberalisation policy in Europe. In the study, Commission of the European Communities (1996) finds that revenue passenger capacity level increased with 800 airlines in Europe (Commission of the European Communities, 1996).

International Air Transport Service Market Liberalisation on Employment: Authority (2004) establishes that the impact of international air transport service market liberalisation on employment is beneficial for the international air transport service through an examination of the impacts of international air service market liberalisation in the United Kingdom. Authority (2004) concludes that international air service market liberalisation generally facilitated the creation of employment in the UK aviation industry over the period 1991 to 2001. Authority (2004) finds that employment in the United Kingdom airline industry increased by 40 percent during this period (Authority, 2004). Through an examination of the economic effects of the European Union Single Aviation Market on the international air transport service market

liberalisation on employment is beneficial for the international air transport service. Button and Drexler (2006) find that the EU Single Aviation Market facilitated the creation of 30,000 jobs in the European Union airline industry (Button & Drexler, 2006).

Through a research study on the economic impacts of air transport service liberalisation, InterVISTAS (2006) establishes that the impact of international air transport service market liberalisation on employment is beneficial for the

international air transport service. InterVISTAS (2006) finds that the establishment of the European Union Single Aviation Market in 1993 led to the generation of 1.4 million new jobs between 1995 and 2004 (InterVISTAS, 2006).

Economic Impacts of International Air Transport Service Market Liberalisation: Evidence from the US – EU Open Aviation Area

The air transport service market between the United Sates and the European Union countries has existed for decades. However, the air transport service market between the United Sates and the European Union countries was characterised with restrictive bilateral air service agreements. The United States and the European Union made a breakthrough by liberalising the trans-Atlantic air transport service market in 2008. The European Union and the United States officials signed the Open Skies/Open Aviation Area (OAA) agreement in March, 2008 to open up the trans-Atlantic air transport service market. The European Union-United States Open Skies/Open Aviation Area agreement employs the bilateral rather than the plurilateral liberalisation approach to promoting international air transport service market competition between the two regions. It replaces 15 bilateral air service agreements between the United States and European Union. The new air transport service agreement permits the United States and the European Union airlines to operate between any cities in the United States and the European Union respectively on the basis of the airlines' commercial preferences. The Open Skies agreement also removes limitations on the number of trans-Atlantic carriers to operate between the United States and the European Union. It permits airlines to determine airfares based on market forces, and allows code sharing (Bhadra & Schaufele, 2011; Cook, 2007). Since the United States and the European Union formalised an Open Skies/Open Aviation Area (OAA) agreement in 2008, researchers and scholars have conducted appreciable amount of research on the impacts of the

Open Aviation Area treaty on the international air transport service. The current research study explores empirical research studies that examine beneficial and defeatist economic impacts of international air transport service market liberalisation on the international air transport service using data generated in the United States-European Union Open Skies/Open Aviation Area. The research study explores empirical studies that investigate beneficial and defeatist economic impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely international air passenger volume; international passenger airfare; international passenger departure frequency; and international revenue passenger load factor employing data generated in the United States-European Union Open Skies/Open Aviation Area. The current study also explores empirical studies that examine beneficial and defeatist economic impacts of international air transport service market liberalisation on employment in the international air transport service and related industries in the United States-European Union Open Skies/Open Aviation Area.

Impacts of International Air Transport Service

Market Liberalisation on International Air Passenger Volume: Maillebiau and Hansen (1995) establish that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through a research study on the impacts of transatlantic air transport service market liberalisation between the United States and five intra-European Union nations namely West Germany, Italy, Great Britain, France, and the Netherlands. West Germany, Italy, Great Britain, France, and the Netherlands. West Germany, Italy, Great Britain, France, and the Netherlands agreed on a liberal bilateral air service market with the US between 1980 and 1990. Maillebiau and Hansen (1995) estimate that the growth of international air passenger volume between the United States and the five European Union nations would range from 40% to 60% in 1989 (Maillebiau & Hansen, 1995).

Through a research study on the consequences of the Open Aviation Area between the European Union and the United States, Brattle Group (2002) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service. Brattle Group (2002) estimates that the Open Aviation Area would generate over 2 million new passengers commuting between the EU and the US per year due to reduced international passenger airfares. Brattle Group (2002) further estimates an annual international air passenger volume growth ranging from 4 million to around 11 million, respectively representing 9% to 24% annual growth of international air passenger volume on transatlantic routes; and from 14 million to 36 million, respectively representing 5% to 14% annual growth of international air passenger volume on intra-European Union routes. These statistics correspond to a total international air passenger volume growth of between 18 million and 47 million annually (Brattle Group, 2002).

study on the economic impacts of air transport service liberalisation, InterVISTAS (2006) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service. InterVISTAS (2006) finds that the simulation of full liberalisation of the United States-United Kingdom market under the Open Skies agreement would generate 29% growth in international air passenger volume (InterVISTAS, 2006). Booz Allen

Hamilton Limited (2007) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service. Booz Allen Hamilton Limited (2007) investigates the economic impact of international air transport service market liberalisation on international air passenger volume through updating the findings of an earlier study on the economic impacts of the Open Aviation Area between the
United States and the European Union (Booz Allen Hamilton Limited, 2007). Booz Allen Hamilton Limited (2007) finds that the European Union international airline industry ferried 650 million scheduled international air passengers in 2004. Booz Allen Hamilton Limited (2007) estimates that international air passenger volume between the United States and the European Union would grow by 26 million (Booz Allen Hamilton Limited, 2007).

Through a research study on the economic impacts of the Trans-North Atlantic Ocean Open Skies between the United States and the European Union, Button (2009) establishes evidence on the impact of international air service market liberalisation on international air passenger volume (Button, 2009). Button (2009) finds that the Trans-North Atlantic Ocean Open Skies between the United States and the European Union would enhance international air passenger volume between the US and the EU by 26 million. Therefore, Button (2009) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service (Button, 2009).

Bhadra and Schaufele (2011) establish that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through a research study on the impacts of the Open Skies/Open Aviation Area agreement between the United States and the European Union. Bhadra and Schaufele (2011) find that the Open Aviation Area would increase air passenger volume by over 25 million over the period 2011-2016 (Bhadra & Schaufele, 2011). Christidis (2016) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through a research study on the liberalisation policy between the European Union and its four partners namely Russia, Morocco, Turkey and the United States over the period 2002-2012. Christidis (2016) finds that there was fast growth of international air passenger volume in each of the four EU external partners over the period 2002-2012. Christidis (2016) finds that there was an international air passenger volume increase of 50% between the EU and its external partners (Christidis, 2016).

Lei et al. (2016) establish evidence on the impact of international air transport service market liberalisation on international air passenger volume via a research study on the economic impacts of the 2004 and 2007 international air transport service liberalisation protocols between the United States and China (Lei et al., 2016). Lei et al. (2016) find that the number of passenger seats provided in the international air transport service market grew from 17,174 to 71,074 over the period 2004-2007, or a 15.3% average annual growth, compared to 2.4% annual growth rate over the period 2001-2004. The number of Chinese nationals travelling to the United States grew to 1.97 million, getting close to 2.09 million, the number of United States nationals travelling to China in 2013 (Lei et al., 2016). Thus, Lei et al. (2016) establish that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service (Lei et al., 2016).

Abate and Christidis (2020) establish that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through a research study on the economic impacts of the liberalisation policy between the European Union and its 27 developing partners. Abate and Christidis (2020) analyse air traffic flows between 28 European Union countries and 27 developing countries of varying extents of international air transport service market liberalisation. They find that international air transport service market liberalisation promoted international air passenger volume by 27% (Abate

Impacts of

International Air Transport Service Market Liberalisation on International Passenger Airfare: Maillebiau and Hansen (1995) establish that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service through a research study on the economic impacts of liberalising the transatlantic air service market between the United States and five intra-European Union nations namely West Germany, Italy, Great Britain, France, and the Netherlands. West Germany, Italy, Great Britain, France, and the Netherlands completed their liberal bilateral air service agreements with the US between 1980 and 1990. Maillebiau and Hansen (1995) find that the liberalisation of the international air transport service market between the US and the five EU countries reduced international passenger airfare by about 40% (Maillebiau & Hansen, 1995).

Peterson and Graham (2008) examine the economic impact of international air transport service market liberalisation on international passenger airfare through a research study on the economic impacts of the Open Skies agreement between the United States and the European Union. Peterson and Graham (2008) estimate that the Open Skies agreement between the United States and the European Union would facilitate the reduction of Trans-North Atlantic passenger airfare by a rate within the range of 10% to 9%. Therefore, Peterson and Graham (2008) establish that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service (Peterson & Graham, 2008).

Through a research study on the economic impacts of the Trans-North Atlantic Ocean Open Skies between the United States and the European Union, Button (2009) establishes that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service. Button (2009) finds that the Trans-North Atlantic Ocean Open Skies between the US and the EU would reduce international passenger airfare by a rate within the range of 2% to 6% (Button, 2009). Abate

and Christidis (2020) establish that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service through a research study on the economic impacts of the liberalisation policy between the European Union and its 27 developing partners. Abate and Christidis (2020) analyse air traffic flows between 28 European Union countries and 27 developing countries of varying degrees of international air transport service market liberalisation. Abate and Christidis (2020) find that international air transport service market liberalisation reduced international passenger airfare by rates within the range of 6% - 23% in the OAA (Abate & Christidis, 2020).

Impacts of International Air Transport Service Market Liberalisation on International Passenger Departure Frequency: Lei et al. (2016) establish that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service through an investigation into the impacts of the 2004 and 2007 international air transport liberalisation protocols between the United States and China. In their research study, Lei et al. (2016) find that the total number of weekly international passenger departure frequencies grew from 53 departure frequencies in 2004 to 251 departure frequencies in 2014 (Lei et al., 2016). Impacts of International Air Transport

Service Market Liberalisation on International Revenue Passenger Load Factor: Abate and Christidis (2020) establish that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service through a research study on the economic impacts of the liberalisation policy between the European Union and its 27 developing partners (Abate & Christidis, 2020). Abate and Christidis (2020) analyse air traffic flows between 28 European Union countries and 27 developing

countries with which the European Union has air service agreements of varying extents of liberalisation. Abate and Christidis (2020) find that the external aviation policy between the EU and its 27 developing partners promoted international air passenger volume, and the increased international air passenger volume fostered the increase of international revenue passenger load factor (Abate & Christidis, 2020).

Impacts of International Air Transport Service Market Liberalisation on **Employment:** Through a research study on the economic impacts of air transport service liberalisation, InterVISTAS (2006) establishes that the impact of international air transport service market liberalisation on employment is beneficial for the international air transport service. InterVISTAS (2006) finds that the simulation of full liberalisation of the United States-United Kingdom market under the Open Skies agreement would generate 117,000 jobs in the air transport service in the United States and the United Kingdom (InterVISTAS, 2006). Booz Allen Hamilton Limited (2007) establishes evidence on the impact of international air transport service market liberalisation on employment through an empirical study on the Open Aviation Area between the European Union and the United States (Booz Allen Hamilton Limited, 2007). Booz Allen Hamilton Limited (2007) finds that the Open Aviation Area created employment of over 72,000 jobs in the international air transport service sectors across the European Union and the United States over the period 2002-2007. Therefore, Booz Allen Hamilton Limited (2007) establishes that the impact of international air transport service market liberalisation on employment is beneficial for the international air transport service sector (Booz Allen Hamilton Limited, 2007). Button (2009)

establishes that the impact of international air transport service market liberalisation on employment is beneficial for the international air transport service sector and the wider economy via his study on the impacts of the Trans-North Atlantic Ocean Open Skies between the United States and the European. Button (2009) finds that the Trans-North Atlantic Ocean Open Skies would create 72,000 jobs in the international air transport service sector and related industries in the United States and the European Union regions over the period 2009-2014. Of the 72,000 jobs, over 70,000 extra permanent jobs would be created in the international air transport service sector and related industries as a consequence of international passenger air volume growth, while more than 1,800 extra jobs would be generated in the international air transport sector and the wider economy as a result of interlining pricing efficiencies in the international air transport service sector (Button, 2009). 2006).

Economic Impacts of International Air Transport Service Market Liberalisation: Evidence from the African Union

The African Union is one of the largest intra-continental domestic commercial air transport service markets in the world. The African Union has been influenced by international endeavours by the United States and the European Union to promote competition in the international air transport service market through deregulation and liberalisation respectively. However, the African Union employs the plurilateral liberalisation approach to promoting international air transport service market competition (Schlumberger, 2009). International Air

Transport Service Market Liberalisation in Africa: Upon acquiring their sovereignties, African states owned their respective territorial airspaces, and established their national flag carriers basically on prestigious drives. In 1960, several African countries, including Nigeria, Cameroon, Senegal, Ivory Coast and Mali joined the International Civil Aviation Organization (ICAO). By 1980, African nations had completed 78 bilateral air transport service agreements among themselves and beyond with European countries. Until the 1970s, however, instead of investing their efforts into building a formidable intra-African air transport service network, many African

nations concentrated on developing air transport service networks with their former colonial masters (Schlumberger, 2009; Warnock-Smith & Njoya, 2017). In the first decades of their sovereignties, African states instituted highly restrictive and protective regulatory systems to safeguard their domestic air transport service markets. Nevertheless, irrespective of their bilateral air service agreements (BASAs) granting 3rd, 4th and 5th freedom rights (Appendix C), African nations still restrict foreign carriers from accessing and entering their domestic air transport service markets today. They still fail to regard international air transport service operations as one of the gateways to economic development and growth (Schlumberger, 2009; Warnock-Smith & Njoya,

2017). The 1960s and 1980s experienced the creation of numerous institutions to regulate international commercial air transport service at continental level in Africa. One such institution is the African Civil Aviation Commission (AFCAC). The International Civil Aviation Organization (ICAO) and the African Union (AU) established the AFCAC, which became operational in 1969, and later on in 1978, became the African Union's Specialised Agency in commercial air transport service operations, basically to promote international cooperation and harmonisation of the airline industry in Africa. Operating at policy level, AFCAC focuses on the promotion of safe, economical, and seamless provision of air transport service in Africa (Warnock-Smith & Njoya, 2017).

The 1980s and 1990s were dominated by pressures on the world economies to liberalise their international air transport service markets. Responding to these pressures, African states negotiated liberal bilateral air service agreements with the United States. The United States completed Open Skies Agreements with 27 African nations up until 2016. However, apart from reflecting preference to conform to the outmoded regulatory framework of the Chicago Convention, the unwillingness by some African nations to sign Open Skies Agreements with the US simply reflects the preference of the African nations for restrictive and protectionist international air transport service market regulation. Thus, irrespective of some African nations signing Open Skies Agreements with the US, most international air transport service markets in Africa are still deeply protected today (Warnock-Smith & Njoya, 2017).

Nonetheless, concrete evidence exists that supports the view that African nations have an amazing opportunity to benefit economically from the liberalisation and the integration of their international air transport service markets. Otherwise, the current international air transport service, which is characterised with protective regulatory regimes, fragmented markets, inadequacy and inefficiency both at international and intercontinental levels, endangers the chances of Africa to benefit optimally from the air transport service sector (Warnock-Smith & Njoya, 2017).

However, Africa has started investing plausible initiatives towards the liberalisation of the African air transport service market, and one such initiative is the conceptualisation of the Yamoussoukro Decision (YD) in 1999. However, a significant precursor to the Yamoussoukro Decision is the Yamoussoukro Declaration. The Yamoussoukro Declaration was conceptualised and jointly proclaimed in 1998. The Yamoussoukro Declaration's air transport service policy basically focuses on the cooperation and integration of African airlines. Upon the failure by the Yamoussoukro Declaration to realise its commitments, it is the Yamoussoukro Decision that sets forth the framework for the upcoming liberalisation endeavours of the intra-African air transport service market (Schlumberger, 2009; Warnock-Smith & Njoya, 2017).

The Yamoussoukro Decision was conceptualised in 1999, and was enforced in 2000, and later on became fully irrevocable in 2002. Despite basically created to set forth the framework for the promotion of intra-African air transport service market competition, the Yamoussoukro Decision was also established to promote equitable competition in the international air transport service market, while encouraging the safety, efficiency, reliability, and affordability of the passenger air transport service in Africa (Warnock-Smith & Njoya, 2017).

Nonetheless, the successful implementation of the Yamoussoukro Decision absolutely hinges on the commitment of Africa's regional economic communities (RECs) namely the Arab Maghreb Union (AMU), the Central African Economic and Monetary Community (CEMAC), the Common Market for Eastern and Southern Africa (COMESA), the Economic Community of West African States (ECOWAS), and the Southern African Development Community (SADC) (Warnock-Smith & Njoya, 2017).

In 2007, having been discouraged by reports of poor and uneven implementation of the Yamoussoukro Decision across Africa, the African Union mandated the AFCAC to take the responsibility of facilitating and coordinating the implementation of the Yamoussoukro Decision across Africa. Consequently, AFCAC dedicates itself in collaborating with different institutions inter alia the International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO) on the progress of international air service market liberalisation in Africa. These initiatives prove helpful in the vitalisation of international air transport service market liberalisation in Africa. For instance, several African nations including Ethiopia, Egypt, and South Africa have successfully established bilateral air service agreements with fellow African nations in accordance with the principles of the Yamoussoukro Decision. By 2006, Ethiopia had signed 19 bilateral air service agreements with fellow African nations in accordance with the principles of the Yamoussoukro Decision. By 2006, Ethiopia had signed African nations to its air transport service market in line with the Yamoussoukro Decision principles. By 2010, South Africa had signed 22 air transport service agreements with fellow

African nations in agreement with the principles of the Yamoussoukro Decision. However, market trends have now started to exert pressures on African states for the establishment of Single African Air Transport Market (SAATM) (Warnock-Smith & Njoya, 2017).

Since the conceptualization of

the Yamoussoukro Decision in 1999, some research has been conducted to examine the impacts of international air transport service market liberalisation on the international air transport service in the African Union. The current research study explores empirical research studies that investigate the economic impacts of international air transport service market liberalisation on the international air transport service using data generated in the African Union. The research study explores empirical studies that investigate beneficial and defeatist economic impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely international air passenger volume; international passenger airfare; international passenger departure frequency; and international revenue passenger load factor employing data generated in the African Union. The research study also explores empirical studies that examine beneficial and defeatist impacts of international air transport service market liberalisation on employment in the international air transport service and related industries in the African Union. Impacts of International Air Transport Service Market Liberalisation on International Air Passenger Volume: Foster and Briceño-Garmendia (2009) establish that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through a study on the trend of international air passenger traffic in the Sub-Saharan Africa since the inception of the Yamoussoukro Decision. Foster and Briceño-Garmendia (2009) find that air passenger volume has been increasing since the time African nations commenced the

implementation of the Yamoussoukro Decision. Foster and Briceño-Garmendia (2009) find that international air passenger volume increased at an annual average rate of 6.5 percent over the period 2004 to 2007 within the Sub-Saharan Africa, while intercontinental air passenger volume grew at an annual rate of 6.2 percent over the period 2001 to 2007 (Foster & Briceño-Garmendia, 2009). Through an examination of the effects of the Yamoussoukro Decision in Africa, Schlumberger (2009) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service. Schlumberger (2009) finds that the annual international air passenger volume between the Sub-Saharan Africa and North Africa increased by approximately 26 percent over the period 2001 to 2004, and the growth was 44 percent over the period 2004 to 2007. The overall rate of the growth of international air passenger volume between the Sub-Saharan Africa and North Africa was 18 percent over the period 2001 to 2007 (Schlumberger, 2009).

Through an investigation into the impacts of liberalising the international air transport service market in Nigeria, Oluwakoya (2011) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service. Oluwakoya (2011) finds that the liberalisation of the international air transport service market promoted the participation of foreign airlines in the Nigerian commercial air transport service market. In the study, Oluwakoya (2011) finds that international air transport service market liberalisation facilitated the growths of international air passenger volume by 9.4 percent per annum during the period 2000 to 2004 (Oluwakoya, 2011).

African Development Bank (AfDB, 2012) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through an investigation into the effects of the liberalisation of

international air transport service markets in Africa. In the study, AfDB (2012) finds that intra-Africa international air passenger volume would grow at an overall rate of 6.1 percent by 2015 (AfDB, 2012).

Gleave (2014) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through an examination of the benefits of international air transport service market liberalisation in Africa. Gleave (2014) finds that African nations benefitted from international air transport service market liberalisation with regard to international air passenger volumes. Overall, international air passenger volumes increased at an annual average rate ranging from 8 percent to 11 percent in the 2000s. For instance, international air passenger volume between Kenya and South Africa rose by 69 percent in the 2000s. International air passenger volume grew by 38 percent between Zambia and South Africa (Gleave, 2014). InterVISTAS (2014)establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through an investigation into the effects of the Yamoussoukro Decision in 12 African nations namely Algeria, Egypt, Tunisia, Ethiopia, Kenya, Uganda, Angola, Namibia, South Africa, Ghana, Nigeria, and Senegal. In the study, InterVISTAS (2014) finds that the growth of international air passenger volumes in the 12 nations ranged from 51 percent in Nigeria to 141 percent in Algeria. Overall, InterVISTAS (2014) finds that international air passenger volumes grew by an average of 81 percent between the 12 nations (InterVISTAS, 2014).

Ismailia et al. (2014) establish that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through an empirical study on the consequences of liberalisation in Nigeria. In the study, Ismailia et al. (2014) find that liberalisation of the international air transport service market facilitated the increase of international air passenger volume by 65% (Ismailia et al., 2014). Yusuf et al. (2017) establish that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service market liberalisation on international air passenger volumes in Nigeria. Yusuf et al. (2017) find that international air transport service market liberalisation on international air passenger volumes in Nigeria. Yusuf et al. (2017) find that international air transport service market liberalisation facilitated the rise of international air passenger volume by 26% (Yusuf et al., 2017).

Deloitte (2018) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through an investigation into the prospects of the Single African Air Transport Market (SAATM), ordinarily known as the Open Skies Treaty. In the study, Deloitte (2018) finds that the Open Skies Treaty would foster the growth of international air passenger volume from 100 million to 300 million by 2026 in Africa (Deloitte, 2018).

Impacts of International Air Transport Service Market Liberalisation on International Passenger Airfare: Irandu (2010) establishes that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service through an examination of the economic impact of the liberalisation of the air transport service industry in the East African Community (EAC). Irandu (2010) finds that international air service market liberalisation facilitated the reduction of international passenger airfares within the EAC region. For example, Irandu (2010) finds that international passenger airfare dropped by 50% on the Nairobi-Entebbe route due to increased competition on the route (Irandu, 2010).

Abate (2013) establishes that the impact of international air transport service market

liberalisation on international passenger airfare is beneficial for the international air transport service through an empirical study on the impacts of international air transport service market liberalisation on international passenger airfares on twenty routes between Addis Ababa and other foreign cities in Africa. Abate (2013) finds that international routes with a certain degree of liberalisation had their passenger airfares reduced by rates ranging from 10% to 21% compared to international routes with restrictive bilaterals (Abate, 2013). Through an

examination into the benefits of international air transport service market liberalisation in Africa, Gleave (2014) establishes that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service. Gleave (2014) finds that African nations benefitted from international air transport service market liberalisation with regard to the reduction of international passenger airfares. For instance, Gleave (2014) finds that international passenger airfares reduced by 38 percent between Zambia and South Africa. Ethiopia also registered international passenger airfare reduction in the range of 10 percent to 21 percent (Gleave, 2014). Through an investigation into the effects of the Yamoussoukro Decision in 12 African nations namely Algeria, Egypt, Tunisia, Ethiopia, Kenya, Uganda, Angola, Namibia, South Africa, Ghana, Nigeria, and Senegal, InterVISTAS (2014) establishes that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service. In the study, InterVISTAS (2014) finds that international air transport service market liberalisation fostered the reduction of international passenger airfares by rates ranging from 25 percent to 35 percent between the 12 nations (InterVISTAS, 2014).

InterVISTAS (2017) establishes that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the

international air transport service through an examination of the potential effects of international air service market liberalisation on international passenger airfares in the East African Community (EAC). InterVISTAS (2017) finds that international air transport service market liberalisation would facilitate international passenger airfare reduction in the EAC region. InterVISTAS (2017) finds that liberalisation in the EAC would lead to 9 percent reduction in international passenger airfare (InterVISTAS, 2017).

Impacts of International Air Transport Service Market Liberalisation on International Passenger Departure Frequency: Irandu (2010) establishes that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service through an examination of the economic impact of the liberalisation of the air transport service industry in the East African Community. Irandu (2010) finds that international air service market liberalisation facilitated the increase of international passenger departure frequencies within the EAC region. For instance, Irandu (2010) finds that international passenger flight frequency between Nairobi and Entebbe increased from 2 weekly flights before liberalization to 28 weekly flights after liberalisation. Between Nairobi and Harare (Zimbabwe), the flights increased from 2 weekly to 8 weekly; and between Nairobi and Cairo (Egypt), from 2 weekly to 9 weekly (Irandu, 2010).

Through an empirical study on the impacts of international air transport service market liberalisation on international passenger departure frequency on twenty routes between Addis Ababa and other foreign cities in Africa, Abate (2013) establishes that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service. Abate (2013) finds that international routes with a certain extent of liberalisation had their passenger departure frequencies increased by rates ranging from 35% to 38% compared to international routes with restrictive bilaterals (Abate,

2013).

Gleave (2014) establishes that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service through an examination into the benefits of international air transport service market liberalisation in Africa. Gleave (2014) finds that African nations benefitted from international air transport service market liberalisation with regard to the increase of international passenger departure frequency. For instance, Gleave (2014) finds that Ethiopia registered international passenger departure frequency increase by rates ranging from 35 percent to 38 percent (Gleave, 2014).

Through a research study on the impacts of international air transport service liberalisation on intra-Africa departure frequencies, Abate (2016) establishes that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service. Abate (2016) finds that intra-Africa departure frequencies increased by 40% in liberalised routes relative to restrictive routes (Abate, 2016).

InterVISTAS (2017)

establishes that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service through an investigation into the potential effects of international air service market liberalisation on international passenger departure frequency in the East African Community. InterVISTAS (2017) finds that international air transport service market liberalisation would facilitate international passenger departure frequency increase by 41 percent in the EAC region (InterVISTAS, 2017). Impacts of International Air Transport Service Market Liberalisation on Employment: AfDB (2012) establishes that the impact of international air transport service market liberalisation on employment is beneficial for the international air transport service through an investigation into the effects of the liberalisation of international air transport service markets in Africa. In the study, AfDB (2012) finds that Africa's air transport service industry created 257,000 jobs in 2010, and AfDB (2012) forecasts the creation of 879,000 jobs by 2030 (AfDB, 2012).

Through an investigation into the effects of the Yamoussoukro Decision in 12 African nations namely Algeria, Egypt, Tunisia, Ethiopia, Kenya, Uganda, Angola, Namibia, South Africa, Ghana, Nigeria, and Senegal, InterVISTAS (2014) establishes that the impact of international air transport service market liberalisation on employment is beneficial for the international air transport service. In the study, InterVISTAS (2014) finds that international air transport service market liberalisation of 155,000 jobs in the air transport service sector (InterVISTAS, 2014).

Through an investigation into the potential effects of international air service market liberalisation on employment in the East African Community, InterVISTAS (2017) establishes that the impact of international air transport service market liberalisation on employment is beneficial for the international air transport service. InterVISTAS (2017) finds that international air transport service market liberalisation would facilitate the creation of 6,000 jobs in the air transport service industry in the East African Community (InterVISTAS, 2017).

Economic Impacts of International Air Transport Service Market Liberalisation: Evidence from the Southern African Development Community

The Southern African Development Community (SADC) is the focus area of the current research study. It is one of the regional economic communities (RECs) of Africa. The Southern African Development Community employs the plurilateral liberalisation approach to promoting international air transport service market competition (Schlumberger, 2009).

International Air Transport Market Liberalisation in the SADC: Prior to independence, air transport services in majority states in the Southern African Development Community were primarily based on the relationships and agreements between the states and their colonial masters. However, upon gaining their independence, most of the nations in the SADC inter alia Botswana, Namibia and Zimbabwe embarked on establishing their own restrictive and protectionist international air transport service market regulatory regimes based on the bilateral air service agreement (BASA) regulatory system developed by the International Civil Aviation Organisation (ICAO). Therefore, majority of the SADC states preferred establishing bilateral air service agreements based on protectionist regulatory regimes rather than developing an intra-SADC regional Open Skies network (Steyn & Mhlanga, 2016; Mhlanga & Steyn, 2018; Schlumberger, 2009).

agreement based protective and restrictive international air transport service market regulatory regime continues to limit international air transport service market competition in the Southern African Development Community. The bilateral air service agreement based protective and restrictive international air transport service market regulatory regime continues to restrict foreign airline investment in the SADC countries. This protective and restrictive international air transport service market regulatory of skies in the Southern African Development Community. Although the liberalisation of skies in the Southern African Development Community. Although the international air transport service industry is important for the Southern African Development Community tourism industry, the ability of airlines to access and enter international air transport service markets remains limited by the BASA based protectionist regulatory regime. Limited international air transport service market access frustrates international air transport service market competition in the SADC. Limited international air

transport service market entry hinders foreign airline investment, thereby frustrating international air transport service market competition in the Southern African Development Community (Bofinger, 2017; Marawa, 2003; Mhlanga, 2017; Mhlanga & Steyn, 2018; Moyo, 2020).

Notably, the bilateral air service agreement based protective and restrictive international air transport service market regulatory regime limits competition between international airlines. Restricted competition between international airlines in turn fosters international air transport service inefficiency, limits international passenger air traffic volumes, and increases international air transport service costs, and eventually lowers the competitiveness and the growth potential of the travel and tourism industry in the Southern African Development Community. Consequently, the protectionist approach limits the international air transport service industry to expand and fulfil its potential in supporting jobs and in enabling economies to grow stronger. In order to be competitive, international airlines in the Southern African Development Community must make themselves distinct through excellent customer service, efficiencies, trade, and tourism propositions. Thus, the failure to liberalise international air transport service market competition in the SADC has reduced opportunities for international airlines to become pan-SADC airlines, which would eventually facilitate the reduction of international passenger airfares, attract airline investment, and boost travel and tourism in the Southern African Development Community (Bofinger, 2017; Marawa, 2003; Mhlanga, 2017; Mhlanga & Steyn, 2018; Moyo, 2020).

An efficient air transport service system is an important part of socio-economic development of the Southern African Development Community. Efficient intra-SADC air service connections enhance regional integration, access to the global economy, and international tourism, and eventually contribute towards the vision to establish the African Economic Community. In 2000, the Southern African Development Community embarked on the liberalisation of the

regional civil aviation sector in order to enhance the efficiency of air transport services. The liberalisation of air transport service markets has been instrumental in transforming civil aviation networks in the United States and the European Union (Bofinger, 2017; Marawa, 2003; Mhlanga, 2017; Mhlanga & Steyn, 2018; Moyo, 2020). However, as is the

case in most regions of the world, the international air transport service industry in the Southern African Development Community is progressively shifting towards liberalisation, where government jurisdiction over international air transport service market access and entry is universally dying out (Button, 2008). The primary purpose of international air transport service market liberalisation is to do away with the challenges brought about by the antiquated and arcane economic regulatory framework of a convoluted network of protectionist bilateral air service agreements in the SADC (Bofinger, 2017; ITF, 2019; Marawa, 2003; Mhlanga, 2017; Mhlanga & Steyn, 2018; Moyo, 2020).

liberalize intra-Africa international air transport service market via the Yamoussoukro Decision (YD) of 1999, which was formally enforced in 2000. African heads of government adopted the YD upon recognising that the outmoded economic regulatory framework of restrictive and protectionist BASAs frustrated the development and expansion of the civil air transport industry in Africa (Steyn & Mhlanga, 2016). The Yamoussoukro Decision removed all restrictions on air traffic rights, capacity, airfares, designations, and frequencies within Africa (Abate, 2013; Schlumberger, 2010). Therefore, African governments expect the YD to foster the advancement of the air transport service industry through progressively liberalising protectionist BASAs across the Continent (Schlumberger, 2009; UNECA, 2001).

However, one of the essential goals of the Yamoussoukro Decision is the liberalisation of international air transport service market access and entry in the Southern African

Development Community. Guided by the YD, the SADC established the Protocol on Transport, Communication and Meteorology to encourage the involvement of the private sector in the air transport service industry. The Protocol also stresses on the need for SADC member states to review state-owned air transport companies, and the need for SADC member states to revitalise the integration of the regional air transport system through crafting relevant legislation and policies. Also, in their effort to jointly invest in international air transport service market liberalisation, the SADC member states created the Joint Competition Authority (JCA) in 2011. Consequently, numerous SADC states have invested serious efforts towards the liberalisation of the international civil aviation service market (Bofinger, 2017; Marawa, 2003; Mhlanga, 2017; Mhlanga & Steyn, 2018; Moyo, 2020; Steyn & Mhlanga, 2016).

Since the Southern African Development Community embarked on air transport service liberalisation through the Yamoussoukro Decision (YD), some research has been conducted to investigate the consequences of liberalising the international air transport service in the Southern African Development Community. The current research study explores empirical research studies that examine beneficial and defeatist economic impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor using data generated in the Southern African Development Community. The research study also explores empirical research studies that investigate the impact of international air transport service market liberalisation on employment in the international air transport service and related industries in the Southern African Development Community. The discussion of empirical research studies on the SADC essentially appreciates how research has advanced knowledge on the current research topic in the SADC, thereby furthering the relevance, worthiness and meaningfulness of the current research study. Impacts of International Air

Transport Service Market Liberalisation on International Air Passenger Volume: Through an investigation into the impacts of open skies on passenger volumes between South Africa and fellow SADC states, Myburgh et al. (2006) establish that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service. Myburgh et al. (2006) find that open skies would facilitate the growth of international air passenger volume by 23% within the Southern African Development Community. Myburgh et al. (2006) also find that open skies would facilitate increase of international air traffic capacity, which in turn would foster the increase of international passenger volume by 12% between South Africa and fellow SADC states (Myburgh et al., 2006).

Through a study on the economic effects of the Yamoussoukro Decision across the regions of Africa, Schlumberger (2009) establishes that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service. In the study, Schlumberger (2009) forecasts that the Yamoussoukro Decision would facilitate the increase of international passenger seat capacity by 72% in the SADC Region (Schlumberger, 2009).

Surovitskikh and Lubbe (2015) establish that the impact of international air transport service market liberalisation on international air passenger volume is beneficial for the international air transport service through an examination of the effects of South Africa's air transport service reform policy on passenger air traffic flows between South Africa and its SADC allies. In the study, Surovitskikh and Lubbe (2015) find that the reform policy facilitated the growth of international air passenger volumes from 21% to 25% between South Africa and its SADC neighbours (Surovitskikh & Lubbe, 2015).

Impacts of International Air Transport Service Market Liberalisation on International **Passenger Airfare:** Myburgh et al. (2006) establish that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service through an investigation into the impacts of open skies on passenger volumes between South Africa and fellow SADC states. Myburgh et al. (2006) find that open skies would facilitate the reduction of international passenger airfare by 18% between South Africa and fellow SADC states (Myburgh et al., 2006). Impacts of International Air Transport Service Market Liberalisation on International Passenger Departure Frequency: Through an investigation into the consequences of the post-apartheid deregulation of airlines in the Southern African Development Community, Pirie (2006) establishes that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service. Upon the abolishment of apartheid in South Africa, there were massive withdrawals of international air transport service sanctions on South Africa by its SADC neighbours. South Africa's SADC allies deregulated their scheduled international airlines to allow them serve international passengers to and from South Africa. In the study, Pirie (2006) finds that deregulation of airlines by South Africa's SADC neighbours facilitated the growth of regional scheduled international commercial passenger flights by over 100% in the region (Pirie, 2006).

Discussion of the Economic Impacts of International Air Transport Service Market Liberalisation

A considerable amount of empirical research employing samples across various regions of the world has been conducted by academic and research organisations to investigate impacts of international air transport service market liberalisation on the international air transport service. Empirical research began from as early as 1990s concentrating on the economic impacts of airline deregulation in the United States, and international air transport service market liberalisation in the European Union and other jurisdictions such as the African Union. The current literature review mostly focuses on research studies over the period 2000-2022 to reflect on old and contemporary views of scholars on the economic impacts of international air transport service market liberalisation on the international air transport service. Empirical literature over the period 2000-2022 shows that airline deregulation and international air transport service market liberalisation respectively have had multiple economic impacts on the international air transport service. The current research study discusses the impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely air passenger volume, passenger airfare, passenger departure frequency, and revenue passenger load factor. The research study also discusses the impacts of international air transport service market liberalisation on employment in the international air transport service and related industries. The general progression of the ideas of researchers and scholars over the period 2000-2022 indicates that the economic impacts of international air transport service market liberalisation on the international air transport service are beneficial for the international air transport service.

Impacts of International Air Transport Service Market Liberalisation on International Air Passenger Volume: Evidence from some existing empirical research on the economic impacts of international air transport service market liberalisation argues that international air transport service market liberalisation promotes international air passenger demand. The empirical research shows that international air transport service market liberalisation fosters international air passenger demand by as much as 75% globally. The empirical research shows that airline deregulation promotes international air passenger demand by as much as 100% in the United States, while international air transport service market liberalisation fosters international air passenger demand by as much as 85% in the European Union. International air passenger volume grows by as much as 70% in the United States-European Union Open Skies/Open Aviation Area. The empirical research shows that international air transport service market liberalisation fosters international air passenger demand by as much as 60% in the African Union. The empirical research forecasts international air passenger demand to grow by as much as 25% between South Africa and its SADC neighbours. Research studies argue that international air transport service market liberalisation promotes international air passenger demand through fostering competition in the international air transport service market. International air transport service market liberalisation promotes competition in the international air transport service market through granting access and entry into the international air transport service market. International air transport service market competition promotes competition in international passenger airfares and international air transport service quality. The competition in international passenger airfares fosters the reduction of international passenger airfare, while the competition in international air transport service quality fosters the improvement of international air transport service quality. The reduction of international passenger airfare and the improvement of international air transport service quality facilitate the growth of international air passenger demand (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

However, some research studies argue that the promotion of international air passenger demand fosters defeatist impacts. The research studies argue that international air passenger demand promotes volatility in airport traffic. The research studies show that international air passenger demand promotes volatility in airport traffic by as much as 12 points on average in the United States (de Neufville & Barber, 1991). Nevertheless, there is scarcity of empirical research that supports this claim.

Impacts of International Air Transport Service Market Liberalisation on International **Passenger Airfare:** Evidence from some existing empirical research on the economic impacts of international air transport service market liberalisation contends that international air transport service market liberalisation fosters the reduction of international passenger airfare. The empirical research shows that international air transport service market liberalisation fosters the reduction of international passenger airfare by as much as 40% globally. The research shows that airline deregulation promotes the reduction of international passenger airfare by as much as 30% in the United States, while international air transport service market liberalisation fosters the reduction of international passenger airfare by as much as 30% in the European Union. The empirical studies show that international air transport service market liberalisation fosters the reduction of international passenger airfare by as much as 40% in the United States-European Union Open Skies/Open Aviation Area. The studies show that international air transport service market liberalisation promotes the reduction of international passenger airfare by as much as 50% in the African Union. The empirical research forecasts international passenger airfare to drop by as much as 18% between South Africa and its SADC neighbours. Research studies argue that international air transport service market liberalisation fosters the reduction of international passenger airfare through promoting competition in international passenger airfares. International air transport service market liberalisation promotes competition in international passenger airfares by granting airlines the freedom to determine international passenger airfares (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009). However, some research studies claim that the deregulation of the

determination of international passenger airfare advances exorbitant airfares to small communities. The studies argue that the deregulation of the determination of airfare is justified by the assumption that commercial air transport service is inherently an enormously competitive business, and therefore, uncontrolled airfares would approximately match costs. The deregulation of airfare is also founded on the assumption that all passengers would enjoy low airfares since airfares would approximately be even. Nevertheless, some studies claim that these assumptions are invalid and, therefore, airfare would not be uniform. This invalidity renders the impact of airline deregulation on international passenger airfare defeatist. The studies also argue that the deregulation of airfare promotes the bankruptcy and the loss of some carriers (Carstensen, 1989; Goetz & Vowles, 2009). Nonetheless, there is scarcely any empirical research study that supports these claims.

Impacts of International Air Transport Service Market Liberalisation on International Passenger Departure Frequency: Evidence from some existing empirical research on the economic impacts of international air transport service market liberalisation claims that international air transport service market liberalisation promotes international passenger departure frequency. The empirical research shows that international air transport service market liberalisation promotes international passenger departure frequency by as much as 80% globally. The empirical research shows that airline deregulation grows international passenger departure frequency by as much as 65% in the United States, while international air transport service market liberalisation grows international passenger departure frequency by as much as 80% in the European Union. International air transport service market liberalisation promotes international passenger departure frequency by as much as 450% in the United States-European Union Open Skies/Open Aviation Area. The empirical research shows that international air transport service market liberalisation promotes international passenger departure frequency by as much as 40% in the African Union. The empirical research studies show that international air transport service market liberalisation promotes international passenger departure frequency by as much as 100% between South Africa and its SADC neighbours. Research studies claim that international air transport service market liberalisation facilitates the increase of international passenger departure frequencies. International air transport service market liberalisation promotes competition in international passenger departure frequencies by granting airlines the freedom to access and enter the international air transport service market (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

Impacts of International Air Transport Service Market Liberalisation on International Revenue Passenger Load Factor: Evidence from some existing empirical research on the economic impacts of international air transport service market liberalisation contends that international air transport service market liberalisation promotes international revenue passenger load factor. The empirical research shows that international air transport service market liberalisation facilitates international revenue passenger load factor by as much as 50% globally. The empirical research shows that airline deregulation facilitates international revenue passenger load factor by as much as 70% in the United States. Research studies argue that international air transport service market liberalisation fosters international revenue passenger load factor through promoting international revenue passenger kilometers. International air transport service market liberalisation promotes international revenue passenger kilometers by granting airlines the freedom to access and enter international air transport service markets of their choice (Abate & Christidis, 2020; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

Impacts of International Air Transport Service Market Liberalisation on Employment: Evidence from some existing empirical research on the economic impacts of international air transport service market liberalisation claim that international air transport service market liberalisation fosters the creation of jobs in the international air transport service sector and related industries. The empirical research shows that international air transport service market liberalisation fosters the creation of jobs by as many as 58 million jobs globally. The empirical research shows that airline deregulation facilitates the creation of jobs by as much as 50% in the United States, while international air transport service market liberalisation facilitates the generation of jobs by as many as 1.4 million in the European Union. International air transport service market liberalisation facilitates the generation of jobs by as many as 72,000 in the United States-European Union Open Skies/Open Aviation Area. The empirical research shows that international air transport service market liberalisation fosters the creation of jobs by as many as 155,000 in the African Union. Research studies claim that international air transport service market liberalisation promotes employment in the international air transport service sector and related industries by fostering the growth of international air passenger demand. International air transport service market liberalisation fosters the growth of international air passenger demand by promoting competition in international passenger airfares and international air transport service quality. International air transport service market liberalisation promotes competition in international passenger airfares by allowing airlines the freedom to determine international passenger airfares. The competition in international passenger airfares facilitates the reduction of international passenger airfare, and reduced international passenger airfare in turn promotes international air passenger demand. International air transport service market liberalisation fosters competition in international air transport service quality by allowing the freedom to access and enter the international air transport service market. The competition in international air transport service quality facilitates the improvement of international air transport service quality, and

improved international air transport service quality in turn promotes international air passenger demand. The international air passenger demand promoted by the reduced international passenger airfare and the improved international air transport service quality facilitates the creation of new jobs in the international air transport service sector and related industries (Button, 2009; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006;

Shaikh, 2009). Conclusions: The empirical evidence is significant enough to conclude that the impact of international air transport service market liberalisation on international air passenger demand is beneficial for the international air transport service. International air transport service market liberalisation promotes international air passenger demand. International air transport service market liberalisation promotes international air passenger demand through fostering competition in the international air transport service market. International air transport service market liberalisation fosters competition in the international air transport service market through granting airlines the freedom to access and enter the international air transport service market. The competition in international passenger airfares facilitates the reduction of international passenger airfare, while the competition in international air transport service quality fosters the improvement of international air transport service quality. The reduction of international passenger airfare and the improvement of international air transport service quality in turn promote international air passenger demand (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The empirical evidence is significant enough to conclude that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service. International air transport service market liberalisation fosters the reduction of international passenger airfare. International air transport service market liberalisation fosters the reduction of international passenger airfare through promoting competition in international passenger airfares. International air transport service market liberalisation promotes competition in international passenger airfares by granting airlines the freedom to determine international passenger airfares (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The empirical evidence is strong enough to conclude that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service. International air transport service market liberalisation facilitates the increase of international passenger departure frequency. International air transport service market liberalisation facilitates the increase of international passenger departure frequency. International air transport service market liberalisation facilitates the increase of international passenger departure frequencies. International air transport through promoting competition in international passenger departure frequencies. International air transport service market liberalisation promotes competition in international passenger departure frequencies by granting airlines the freedom to access and enter the international air transport service market (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The empirical evidence is strong enough to conclude that the impact of international air transport service market liberalisation on international revenue passenger load factor is beneficial for the international air transport service. International air transport service market liberalisation fosters international revenue passenger load factor. International air transport service market liberalisation fosters international revenue passenger load factor through promoting international revenue passenger kilometers. International air transport service market liberalisation promotes international revenue passenger kilometers by granting airlines the freedom to access and enter international air transport service markets of their choice (Abate & Christidis, 2020; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The empirical evidence is significant enough to conclude that the impact of international air transport service market liberalisation on jobs is beneficial for the international air transport service sector and related industries. International air transport service market liberalisation promotes employment in the international air transport service sector and related industries. International air transport service market liberalisation promotes employment in the international air transport service sector and related industries by fostering the growth of international air passenger demand. International air transport service market liberalisation fosters the growth of international air passenger demand by promoting competition in international passenger airfares and international air transport service quality. International air transport service market liberalisation promotes competition in international passenger airfares by allowing airlines the freedom to determine international passenger airfares. International air transport service market liberalisation fosters competition in international air transport service quality by allowing the freedom to access and enter the international air transport service market. The competition in international passenger airfares promotes the reduction of international passenger airfare, whereas the competition in international air transport service quality facilitates the improvement of international air transport service quality. The reduction of international passenger airfare and the improvement of international air transport service quality promote international air passenger demand. The international air passenger demand promoted by the reduction of international passenger airfare and the improvement of international air transport

service quality facilitates the creation of new jobs in the international air transport service sector and related industries (Button, 2009; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

Chapter Summary

The purpose of this quantitative research study is to establish whether the magnitudes and the statistics of the actual economic impacts of international air transport market liberalisation on the international air transport service are significant in the SADC. This chapter provides theoretical and empirical support for the research purpose by respectively identifying the theoretical framework of the research study, and by exploring relevant empirical literature that discusses the economic impacts of international air transport service market liberalisation on the international air transport service. The research

study discusses three main alternate economic worldviews namely capitalism, socialism, and mixed economic worldviews, and selects the capitalism economic worldview for the theoretical framework. The capitalism economic worldview supports the statement of the research problem, the statement of the research purpose, the research questions and the research hypotheses. The capitalism economic worldview advocates market liberalisation to foster the reduction of market price through granting service providers the freedom to determine market prices. The capitalism economic worldview champions market liberalisation to facilitate the improvement of service quality through granting foreign competitors access and entry into the market. The capitalism economic worldview also advocates market liberalisation to promote demand through promoting market competition and improvement of service quality. The capitalism economic worldview also champions market liberalisation to foster the reduction promoting market liberalisation to foster the creation of jobs in industries through promoting demand (Duncan & Schimpfössl, 2019; Gudmundsson, 2011; Hall & Soskice 2001; Naz, 2014;

Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009; Soskice & Hall, 2001).

The research study also identifies theories specific to the research study to guide the empirical analysis of the economic impacts of international air transport service market liberalisation on the international air transport service. These theories express relationships that link international air transport service market liberalisation to the demand and supply side variables of the international air transport service. The theories are based on the general proposition that international air transport service market liberalisation influences the demand and supply side variables of the international air transport service market service, particularly international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor. These theories form the basis of the econometric framework of the research study.

To provide empirical support for the research problem and purpose, the current research study explores empirical literature that examines the economic impacts of international air transport service market liberalisation on the international air transport service. The research study explores empirical literature that examines the economic impacts of international air transport service market liberalisation employing data generated at global level, in the United States, the European Union; the African Union; and the Southern African Development Community. In each case, the research study explores empirical studies that examine the impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service, specifically on air passenger volume, passenger airfare, passenger departure frequency, and revenue passenger load factor. In each case, the research study also explores empirical studies that investigate the impacts of international air transport service market liberalisation on the US and the EU provide evidence that forms a source of comparative material between the developing economies and the emerging economies. The empirical

research shows that international air transport service market liberalisation fosters international air passenger demand by as much as 75% globally. The empirical research shows that airline deregulation promotes international air passenger demand by as much as 100% in the United States, while international air transport service market liberalisation fosters international air passenger demand by as much as 85% in the European Union. International air passenger volume grows by as much as 70% in the United States-European Union Open Skies/Open Aviation Area. The empirical research shows that international air transport service market liberalisation fosters international air passenger demand by as much as 60% in the African Union. The empirical research forecasts international air passenger demand to grow by as much as 25% between South Africa and its SADC neighbours.

that international air transport service market liberalisation fosters the reduction of international passenger airfare by as much as 40% globally. The research shows that airline deregulation promotes the reduction of international passenger airfare by as much as 30% in the United States, while international air transport service market liberalisation fosters the reduction of international passenger airfare by as much as 30% in the European Union. The empirical studies show that international air transport service market liberalisation fosters the reduction of international passenger airfare by as much as 40% in the United States-European Union Open Skies/Open Aviation Area. The studies show that international air transport service market liberalisation promotes the reduction of international passenger airfare by as much as 50% in the African Union. The empirical research forecasts international passenger airfare to drop by as much as 18% between South Africa and its SADC neighbours. The empirical research shows that international air transport service market liberalisation promotes international passenger departure frequency by as much as 80% globally. The empirical research shows that airline deregulation grows international passenger departure frequency by as much as 65% in the United States, while international air transport service market liberalisation grows international passenger departure frequency by as much as 80% in the European Union. International air transport service market liberalisation promotes international passenger departure frequency by as much as 40% in the European Union. International air transport service market liberalisation promotes international passenger departure frequency by as much as 450% in the United States-European Union Open Skies/Open Aviation Area. The empirical research shows that international air transport service market liberalisation promotes international passenger departure frequency by as much as 40% in the African Union. The empirical research studies show that international air transport service market liberalisation promotes international passenger departure frequency by as much as 40% in the African Union. The empirical research studies show that international air transport service market liberalisation promotes international passenger departure frequency by as much as 40% between South Africa and its SADC neighbours.

The empirical research shows that international air transport service market liberalisation facilitates international revenue passenger load factor by as much as 50% globally. The empirical research shows that airline deregulation facilitates international revenue passenger load factor by as much as 70% in the United States.

The empirical research shows that international air transport service market liberalisation fosters the creation of jobs by as many as 58 million jobs globally. The empirical research shows that airline deregulation facilitates the creation of jobs by as much as 50% in the United States, while international air transport service market liberalisation facilitates the generation of jobs by as many as 1.4 million in the European Union. International air transport service market liberalisation facilitates the generation of jobs by as many as 72,000 in the United States-European Union Open Skies/Open Aviation Area. The empirical research shows that international air transport service market liberalisation fosters the creation of jobs by as many as
155,000 in the African Union.

The research study discusses beneficial and defeatist impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service, particularly international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor. The research study concludes that the impact of international air transport service market liberalisation on international air passenger demand is beneficial for the international air transport service. International air transport service market liberalisation promotes international air passenger demand. International air transport service market liberalisation promotes international air passenger demand through fostering competition in the international air transport service market. Competition in the international air transport service market promotes competition in international passenger airfares and international air transport service quality. The competition in international passenger airfares facilitates the reduction of international passenger airfare, while the competition in international air transport service quality fosters the improvement of international air transport service quality. The reduction of international passenger airfare and the improvement of international air transport service quality in turn promote international air passenger demand (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The research study concludes that the impact of international air transport service market liberalisation on international passenger airfare is beneficial for the international air transport service. International air transport service market liberalisation fosters the reduction of international passenger airfare. International air transport service market liberalisation fosters the reduction of international passenger airfare through promoting competition in international passenger airfares. The competition in international passenger airfares fosters the reduction of international passenger airfare (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009). The research study concludes that the impact of international air transport service market liberalisation on international passenger departure frequency is beneficial for the international air transport service. International air transport service market liberalisation facilitates the increase of international passenger departure frequency. International air transport service market liberalisation facilitates the increase of international passenger departure frequency. International air transport service market liberalisation facilitates the increase of international passenger departure frequency. International passenger departure frequency through promoting competition in international passenger departure frequencies fosters the increase of international passenger departure frequency (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The research study concludes that the impact of international air transport service market liberalisation on international revenue passenger load factor is beneficial for the international air transport service. International air transport service market liberalisation fosters the improvement of international revenue passenger load factor. International air transport service market liberalisation fosters the improvement of international revenue passenger load factor through promoting international revenue passenger kilometers (Abate & Christidis, 2020; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The research study concludes that the impact of international air transport service market liberalisation on jobs is beneficial for the international air transport service sector and related industries. International air transport service market liberalisation promotes employment in the international air transport service sector and related industries. International air transport service market liberalisation promotes employment in the international air transport service sector and related industries by fostering the growth of international air passenger demand. International air transport service market liberalisation fosters the growth of international air passenger demand by promoting competition in international passenger airfares and international air transport service quality. The competition in international passenger airfares promotes the reduction of international passenger airfare, whereas the competition in international air transport service quality facilitates the improvement of international air transport service quality. The reduction of international air transport service quality promote international air transport service quality promote international air passenger demand. The international air transport service quality promote international passenger airfare and the improvement of international air passenger demand promoted by the reduction of international passenger airfare and the improvement of international air transport service sector and related industries (Button, 2009; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

CHAPTER 3: RESEARCH METHOD

The problem is the persistent poor economic performance of the international air transport service in the Southern African Development Community. The economic performance of the international air transport service continues to be poor in spite of some economies experiencing some international air transport service market liberalisation through the Yamoussoukro Decision in the Southern African Development Community. For example, the survey by Pearce (2017) reveals that Airlines in Africa were the poorest economic performers at net post-tax losses of 800 US\$ million, 1.0 US\$ billion and 100 US\$ million in 2014, 2015 and 2016 respectively; and it also claims that the scenario would continue with an estimated net post-tax loss (US\$ billion) of 100 US\$ million in 2017 (Pearce, 2017). The latest survey by Pearce (2019) demonstrates that African airlines continued to be the poorest economic performers with a downward spiral at net post-tax losses of 100 US\$ million and 200 US\$ million in 2018 and 2019 respectively, with the Southern African Development Community (SADC) alone reporting an approximate collective \$300 million loss in 2018. This survey further contends that the trend would persist with African airlines with a

projected net post-tax loss of 200 US\$ million in 2020 (Pearce, 2019).

Southern The African Development Community started undertaking some international air transport service market regulatory reforms through the Yamoussoukro Decision in 2000, expecting international air transport service market liberalisation to improve the economic performance of the international air transport service, and to enhance consumer welfare in the SADC. International air transport service market liberalisation is advocated by many as the panacea to the economic challenges facing the international air transport service. It is believed to be the right direction for the international commercial air transport service to benefit the most out of the global air transport service market. International air transport service market liberalisation fosters competition in the international air transport service market through promoting market access and entry. International air transport service market competition in turn promotes international air passenger demand through fostering competition in international passenger airfares and international air transport service quality (Cetin & Eryigit, 2018; Naz, 2014; Scott, 2006). These beliefs, from both outside and within the international air transport service sector, have made it incumbent upon economies in the Southern African Development Community to undertake some international air transport service market regulatory reforms through the Yamoussoukro Decision. Accordingly, the international air transport service market is experiencing new trends towards liberalisation through the Yamoussoukro Decision, and government jurisdiction over international air transport service market competition is gradually dying out in the Southern African Development Community (Moyo, 2020; Myburgh et al., 2006; SADC, 2018; Surovitskikh & Lubbe, 2015).

As revealed above, the economic performance of the international air transport service continues to be poor (Pearce, 2017, 2019) in spite of some economies experiencing some

international air transport service market liberalisation through the Yamoussoukro Decision in the Southern African Development Community (Moyo, 2020; Myburgh et al., 2006; SADC, 2018; Surovitskikh & Lubbe, 2015). Nevertheless, it is worth mentioning that the economic performance of the international air transport service is not only influenced by the international air transport service market regulatory environment, but also by geographical and socio-economic characteristics of a particular region such as distance between international air transport service markets, size of the international air transport service markets, existing geographical barriers between the international air transport service markets, population density of the region, purchasing power of the population, and overall economic environment of the region (Grančay, 2009). However, international air transport service market liberalisation appears to have had multiple economic impacts on the international air transport service in the SADC (Mhlanga, 2017; Myburgh et al., 2006; Pirie, 2006; Surovitskikh & Lubbe, 2015). Nevertheless, the main challenge has been inadequate knowledge on the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The existing body of research on the economic impacts of international air transport service market liberalisation is bereft of research that has attempted to empirically establish the significance of the magnitudes and the statistics of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the SADC. Therefore, in an attempt to establish whether the actual economic impacts of international air transport service market liberalisation on the international air transport service are significant in the SADC, this research study commits to empirically investigate the actual economic impacts of international air transport service market liberalisation on the international air transport service in the SADC. The purpose of this quantitative research study is to establish

the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The existing research has scarcely established whether the magnitudes and the statistics of the actual economic impacts of international air transport market liberalisation on the international air transport service are significant in the SADC.

Ever since researchers and scholars came to the limelight advocating international air transport service market liberalisation as the right direction for the international commercial air transport service to benefit the most from the world air transport service market, the Southern African Development Community embarked on undertaking international air transport service market regulatory reforms through the principles of the Yamoussoukro Decision (Myburgh et al., 2006; Surovitskikh & Lubbe, 2015). It seems international air transport service market liberalisation has had multiple economic impacts on the international air transport service in the SADC (Mhlanga, 2017; Myburgh et al., 2006; Pirie, 2006; Surovitskikh & Lubbe, 2015). The current research study is committed to establish whether the magnitudes and the statistics of the actual economic impacts of international air transport service market liberalisation on the international air transport service are significant in the SADC.

This chapter is designed to provide a structure that guides the empirical realisation of the purpose of the research study. Accordingly, the chapter is organised into a system of sections namely Research Approach and Design, Population and Sample of the Research Study, Materials/Instrumentation of Research Tools, Operational Definition of Variables, Study Procedures and Ethical Assurances, and Data Collection. The Research Approach and Design section identifies appropriate approach and design for the research, while the Population and Sample of the Research Study section defines the population and suitable sample of the research

study. The Materials/Instrumentation of Research Tools section identifies suitable secondary data collection tools for the research, whereas the Operational Definition of Variables section defines operational variables of the research. The Study Procedures and Ethical Assurances section outlines appropriate procedures and ethical assurances and, finally, the Data Collection section identifies suitable data collection and analysis techniques for the research.

Research Approach and Design

Different scholars and researchers working in different fields have proposed several definitions of research. Other researchers define research as a systematic investigation undertaken in order to discover new facts through the application of scientific procedures. People undertake research in order to find out new things in a systematic way. The purpose of research is to find out the yet to be discovered hidden truth, thereby developing knowledge. Other researchers define research as a scientific and systematic search for pertinent information on a specific question or topic. It is a careful investigation through search for hidden facts regarding a certain phenomenon in any branch of knowledge (Dawson, 2002; Goundar, 2012; Kothari, 2003; Saunders et al., 2003). The research system concerns identification of a theoretical or practical problem; translation of that problem into a research question; acquisition of data; analysis of the data; and reporting of the findings of the research. The structure of the research process is referred to as research approach, while a specific direction for procedures within a particular research approach is referred to as research design (Creswell & Creswell, 2017; Goundar, 2012; Kothari, 2003; Salvador, 2016; Saunders et al., 2003).

Research Approaches

Researchers advance three approaches to research namely qualitative, quantitative, and mixed methods. Qualitative, quantitative, and mixed methods approaches are not as discrete categories, rigid, polar opposites or dichotomies as they may first be viewed. In lieu, qualitative and quantitative represent distinct ends on a continuum, with mixed methods lying in the middle as it combines strengths of both qualitative and quantitative approaches (Creswell & Creswell, 2017; Goundar, 2012; Kothari, 2003; Saunders et al., 2003).

Qualitative and quantitative approaches are often distinct in that qualitative research uses words, while quantitative research employs numbers or, better yet, qualitative research uses openended questions and responses, whereas quantitative research employs closed-ended questions and responses. An absolute way to picture the spectra of distinctions between qualitative research and quantitative research is in the forms of research designs researchers employ in a study, and the particular methods researchers use to implement research designs. Mixed methods research emerged during the final half of the twentieth century. Mixed methods research approach combines the characteristics of qualitative and quantitative approaches (Cohen et al., 2017; Creswell & Creswell, 2017; Goundar, 2012; Tuli, 2010). The Qualitative Research

Approach: Since qualitative research concerns a broad range of designs and methods within different subjects of research, scholars and researchers have provided distinct definitions of qualitative research. Strauss and Corbin (1990, pp. 10-12) define qualitative research as "research that provides results not found by employing statistical processes or other procedures of quantification. Qualitative research may refer to study on persons' lives, lived experiences, behaviours, emotions, and feelings as well as on organisational functioning, social movements, cultural phenomena, and interactions between nations" (Cohen et al., 2017; Strauss & Corbin,

1990). Rahman (2020) argues that qualitative research incorporates multiple realities and is not statistical in nature. Consequently, qualitative research implies an all-embracing idea that can frame a diversity of issues, and bears positive and negative perspectives (Goundar, 2012; Rahman, 2020; Scott & Morrison, 2006).

There are some scholars and researchers that have highlighted several benefits of employing qualitative approaches. Some scholars and researchers claim that qualitative approaches provide detailed description of participants' experiences, feelings, and opinions; and interpretations of their actions. For instance, to achieve insights into issues involving designing; administering; and interpreting language assessment, researchers employ qualitative approaches. Other scholars argue that qualitative approaches comprehensively understand human experience in real contexts. For instance, researchers argue that qualitative research is an interdisciplinary field which encompasses a broad array of methodological perspectives, research designs, methods, and techniques of interpreting human experiences. In summary, the main advantages of qualitative approaches are as follows (Goundar, 2012; Queirós et al., 2017; Rahman, 2020; Scott & Morrison, 2006):

• Qualitative approaches provide detailed description of participants' experiences.

♦ Qualitative approaches comprehensively understand human experience in real contexts.

Disadvantages: Some scholars contend that qualitative approaches at times leave out contextual sensitivities, and focus more on meanings and experiences. For example, scholars argue that phenomenological approach endeavours to reveal, interpret and understand participants' experiences, but ignores contextual influence. Other researchers contend that small sample sizes employed in qualitative approaches raise issues of generalisability to the entire population. Thus, other scholars have conceded that qualitative research findings fall short of claiming broader

generalisation to other settings due to the small sample sizes. In summary, the main disadvantages of qualitative approaches are as follows (Goundar, 2012; Queirós et al., 2017; Rahman, 2020; Scott & Morrison, 2006):

- Qualitative approaches sometimes exclude contextual sensitivities, and focus more on meanings and experiences.
- The use of small sample sizes in qualitative approaches raises issues of generalisability to the entire population.

The Quantitative Research Approach: Scholars and researchers converge on the definition of quantitative approaches. Other scholars define quantitative approach as an approach that stresses quantification in acquisition and analysis of data. Expressly, the approach puts emphasis on the measurement of variables that exist in the social world. It separates the social world into empirical fundaments known as variables, which can be provided numerically, and whose relationships with one another can be investigated by statistical techniques. The quantitative approach believes that there is separation between person and reality; reality is objective and exists over and above the human mind; research methods are statistics and content analysis (Goundar, 2012; Rahman, 2020; Scott & Morrison, 2006; Shields & Twycross, 2008).

Advantages: The employment of statistical data as a tool is one of the advantages of the quantitative approach as it saves time and effort. Researchers contend that quantitative approach stresses on the use of statistical data for the research descriptions and analysis in order to save the time and resources which would have been devoted to describe the findings of the research. A computer can conduct statistical data analysis using a software package, for instance, the statistical package for social science (SPSS), which rescues a lot of effort and resources. Scholars and professionals argue that generalisation to the whole population is possible with quantitative

approaches through the employment of scientific methods for data acquisition and analysis. They contend that interaction with a probabilistic sample can be reflective of the whole population. Quantitative approach results can be generalised to the entire society because they involve large randomly selected samples (Eyisi, 2016; Queirós et al., 2017; Rahman, 2020). In summary, the main advantages of quantitative approaches are as follows (Eyisi, 2016; Goundar, 2012; Queirós et al., 2017; Rahman, 2020):

- Quantitative approach employs statistical data which can be analysed using a software package such as the statistical package for social science (SPSS).
- Quantitative approach results can be generalised to the entire society because they involve large randomly selected samples.

Disadvantages: One of the weaknesses of the quantitative approach is the detachment between the researcher and the participants. The detachment between the researcher and the participants implies that the researcher is a mere observer in the study. It is exceedingly difficult to get the insights of a phenomenon within its real world setting with this sort of relationship between the researcher and the participant. Another disadvantage with quantitative approach is that the approach is structured with fixed design, hypotheses and variables. Consequently, the approach falls short of promoting imaginative, critical and creative thinking with the fixed strategies. Any data acquired advance the support or the rejection of the pre-decided paradigms. The approach can hardly assist in resolving the unknown or refurbishing the known (Eyisi, 2016; Queirós et al., 2017; Rahman, 2020). Thus, the main weaknesses of quantitative approaches are as follows (Goundar, 2012; Eyisi, 2016; Queirós et al., 2017; Rahman, 2020):

- Quantitative approach detaches researchers from participants.
- Quantitative approach is structured with fixed design, hypotheses and variables.

The Mixed Methods Research Approach: Some researchers view mixed methods approach as a method that combines qualitative and quantitative data acquisition and analysis in a parallel fashion. In mixed methods approach, two different forms of data are acquired and analysed sequentially. The researchers view mixed methods as the employment of numerical and text data; and statistical and analytical tools, although applying the same method. For one phase of a study, mixed methods approach employs the qualitative paradigm, and the mixed methods approach employs the quantitative paradigm in the other phase of the study. Other researchers view mixed methods approach as a natural complement to employing either of the conventional qualitative method or quantitative method in confinement. They view mixed methods approach as the category of research in which the researcher combines or mixes qualitative and quantitative approaches, methods and techniques in the same study. Other researchers further argue that mixed methods research is beyond acquiring data in both qualitative and quantitative forms as it integrates, relates, or mixes data at some stage of the research process. They contend that the logic that underlies mixed methods research is that either qualitative method or quantitative method is insufficient on its own to apprehend the insights of a phenomenon. Researchers stipulate that mixed methods approach concerns the employment of induction, which refers to the discovery of patterns; and deduction, which concerns testing theories and hypotheses. However, mixed methods approach requires the researcher to invest vast amount of time and resources for the study (Goundar, 2012; Eyisi, 2016; Rahman, 2020).

The Approach Selected for the Research Study

From the discussion above, the current research study views the quantitative approach appropriate for the research. There are core factors that influence a research study to choose one approach over another given the possibility of qualitative, quantitative, or mixed methods approaches. The major factor that influences the current research study to choose quantitative approach over the other approaches is the research question. A research question is a gap in knowledge a particular research study intends to address. The research question emerges from a gap in the literature, or a conflict in research findings in the literature, or under-researched and neglected topics in the literature (Creswell & Creswell, 2017; Nasser, 2001). The current research question seeks to know the significance of the magnitudes and the statistics of the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The research study employs a deductive approach through a system of hypotheses to address the research question. Therefore, the research study views the quantitative approach as an appropriate approach for statistical estimation of the magnitudes and the statistics of the economic impacts of international air transport service market liberalisation (Wooldridge, 2015). Some researchers and

scholars have successfully applied the quantitative research approach in the air transport field. Brattle Group (2002) has successfully employed the quantitative approach in its study titled "The economic impact of a EU-US Open Aviation Area". InterVISTAS (2006) is another seminal researcher who has successfully used this research approach in its study titled "The Economic Impact of Air Service Liberalization". Some other seminal researchers who have successfully employed the quantitative approach include inter alia Booz Allen Hamilton Limited (2007) in its empirical study titled "The Economic Impacts of an Open Aviation Area between the EU and the US"; and InterVISTAS (2015) in its study titled "The Economic Impact of Air Service Liberalization". Quantitative Approaches for Evaluating

the Impacts of Liberalisation: Quantitative approaches to the evaluation of the economic impacts of international air transport service market liberalisation include time series and cross-sectional approaches. The two approaches rely on comparing the impact of liberal international air transport markets to the impact of restrictive international air transport markets. Both the time series structure and the cross-sectional structure apply broadly distinct ceteris paribus instruments in keeping other variables fixed (InterVISTAS, 2006, 2015).

The Time Series Approach: The time series evaluation structure demands identifying at least one country-pair which has recently undergone liberalisation. The impact of international air transport service market liberalisation on the economic aspects of international air service business environments can be estimated by comparing levels of the aspects of the international airline industry under consideration before and after liberalisation. Employing one country-pair helps gratify ceteris paribus needs, and separates factors that are distinct for liberalisation (InterVISTAS, 2006). However, main pitfalls of the time series or case history estimating approach include (InterVISTAS, 2006, 2015):

- The experience of one separate and distinct case cannot automatically be generalised to other cases. Though states agree on what generally qualifies a liberalised bilateral air service market, the circumstances before liberalisation can be absolutely distinct in many ways. Therefore, it is tough to link a specific amount of international airfare reduction or air traffic growth or any other aspect of the international air service business environment to a specific extent of liberalisation.
- Both parties in a country-pair are not automatically compelled to apply all provisions even if a country-pair liberalises an agreement. For example, usually not both members in a country-pair assign a second airline.
- Some nation-pairs may adopt de jure restrictive bilaterals. However, a nation-pair may decide to adopt several liberal variations on an optional basis, thereby adopting de facto liberalisation.

- Sometimes, even under the most favourable bilateral agreements, there would be no immediate tangible impact of international air service market liberalisation on the international airline industry where both parties in a nation-pair are affected by challenges that forestall viable international air services.
- Sometimes airlines of third countries pose challenges where fifth freedom rights are granted.
 Where fifth freedom rights are granted, airlines of third countries may serve a nation-pair besides the airlines of the two nations in question.
- Sometimes the time series approach faces challenges resulting from structural changes in the industry, such as airline mergers, failures and strategic alliances.
- Because of economic growth, sometimes there will be changes in international airfares, traffic or other aspects of the international air service industry despite artificial bilateral air service restrictions.
- Sometimes it is difficult to separate pre-liberalisation period from post-liberalisation period.
 The impacts of international air service market liberalisation take a long time to manifest, and the adjustment period becomes longer as the change becomes more drastic.
- Time series approach creates a selection bias as the particular nations, for example, the United States or the European Union, that chose to liberalise their international air transport markets, are by definition the major source of pre-liberalisation and post-liberalisation periods.

The many observable constituents that establish a relationship can effectively be considered by the time series approach only. Many dynamic constituents and the nuances of preliberalisation regime can be traced out by the time series approach. The manner in which liberalisation occurs and the route of its transformation can be illustrated by the time series structure. Nonetheless, results based on the times series approach can hardly be generalised to the entire population (InterVISTAS, 2006).

The time series approach needs an in-depth analysis of socio-economic variables besides the aspects of the international air service industry in question. The time series approach also needs to deal with complex qualitative matters inter alia bilateral relationships, airline industry reconstitution, and social concerns specific to the nations under consideration. Nevertheless, predicting findings for any arbitrary nation-pair is challenging with this approach (InterVISTAS, 2006).

The Cross-Sectional Approach: The cross-sectional evaluation approach is an alternate framework to the time series evaluation approach. The cross-sectional framework can quantify the impact of international air transport service market liberalisation. The cross-sectional approach provides an explicit and rigorous framework that can universally be employed, and that can produce extrapolations for any arbitrary country-pair. Theoretically, the cross-sectional structure provides a vigorous estimation of the impacts of international air transport service market liberalisation for any arbitrary nation-pair through the employment of a huge sample of nationpairs. The cross-sectional approach is employed for the analysis of a minimum of two, ideally, thousands of aviation relationships of country-pairs at the same period in time. This approach assumes that a particular relationship between air traffic, the degree of liberalisation, and socioeconomic conditions applies to every market, rather than holding certain base conditions constant for a few narrowly defined variables. A particular international air transport service market displays distinct air traffic volumes, airfares, frequencies, socioeconomic variables, freedoms of the air, and extents of liberalisation in the international air transport service markets. Through developing variations in economic activity and other unnecessary factors, the cross-sectional

approach seeks to explain variations in the air passenger demand, airfares, frequencies, and socioeconomic variables between different country-pairs to variations in their international air transport service markets. The cross-sectional approach isolates the separate impacts of route definitions, single or multiple designations, pricing controls, the presence or absence of fifth freedom permissions, and other attributes of international air transport service markets (InterVISTAS, 2006, 2015: Myburgh et al, 2006). However, many shortcomings of the cross-

sectional evaluation structure are similar to those of the time series evaluating approach. A country-pair in a particular sample encounters a distinct set of socioeconomic and political circumstances. The cross-sectional approach, employing an adequately huge sample, assumes stochastic deviations in each fundament of the sample, and establishes patterns basing on a statistical procedure. The times series approach deals with each aspect at a time, and makes a correction for each variation as it arises (InterVISTAS, 2006). Nevertheless, there are analytical issues unique to the cross-sectional data analysis structure (InterVISTAS, 2006):

- Air service agreements are complex in nature and basically involve hundreds of clauses that are important facets of a wider aviation regime. However, the cross-sectional structure endeavours to integrate all aspects of air service agreements into a descent and formal structure of a few variables.
- There are estimation challenges with the cross-sectional approach as the attributes of an air service agreement rely on economic forces. Every aspect of an aviation policy of a party in a nation-pair is mirrored by an air service agreement.
- The amount of time required for a market to respond to changes in the underlying regulatory approach may span from a few months to numerous decades, and this poses a challenge to the cross-sectional approach as it addresses a particular point in time.

- Like any econometric research, the cross-sectional approach faces the challenge of limitation of the availability, timeliness, and the quality of the secondary data. The process of selecting markets for evaluation is consistently biased towards certain markets since the availability, timeliness, and the quality of data may be correlated with levels of national wealth and economic activity.
- The cross-sectional structure involves all sizes of nation-pair markets. Numerous econometrical processes may load disproportionately huge burden on the biggest markets.
- The cross-sectional structure does not consider interactivity between nation-pairs. For example, the reaction of a big airline to a liberal air service agreement can reroute air traffic from conservative air service agreements.
- The cross-sectional structure ignores the age of a relationship between a nation-pair. In a newly liberalised market, the impacts of international air transport service market liberalisation may not have reached equilibrium amounts passenger airfare.

The Approach Selected for the Research Study: The current research study views the cross-sectional evaluation approach an appropriate framework. The time series and the cross-sectional approaches both provide unique advantages. However, cross-sectional models such as gravity models and multiple regressions are appropriate where the impacts of changes in a policy can be segregated, and where traffic data between members of a country-pair are available. The cross-sectional evaluation approach shows the significant role played by international air transport service market liberalisation and fundamental economic variables such as GDP, levels of trade, and geographical variables in determining traffic flows in a particular international air service market. The cross-sectional approach also provides an explicit and rigorous model that can universally be employed, and that can produce extrapolations for any arbitrary country-pair

(Grančay, 2009; InterVISTAS, 2006, 2015; Ismaila, Warnock-Smith & Hubbard, 2014). Hence the current research study applies cross-sectional regression models in the estimation of the economic impacts of international air transport service market liberalisation.

Some seminal research studies that have successfully employed the cross-sectional approach include Brattle Group (2002), InterVISTAS (2006), and Myburgh et al. (2006) in their respective studies titled "The economic impact of a EU-US Open Aviation Area"; "The Economic Impact of Air Service Liberalization"; and "Clear skies over southern Africa". Other renowned researchers who have successfully employed the cross-sectional approach include Booz Allen Hamilton Limited (2007) in its study titled "The Economic Impacts of an Open Aviation Area between the EU and the US"; Peterson and Graham (2008) in their study titled "Open skies: an assessment of the US-EU open aviation area agreement"; Abate (2013) in his study titled "Economic Effects of Air Transport Liberalization in Africa"; and InterVISTAS (2015) in its study titled "The Economic Impact et al. (2015) in their study titled "The Economic Impact of Air Service Liberalization"; and Burghouwt et al. (2015) in their study titled "EU air transport liberalisation process, impacts and future considerations".

Econometric Framework of the

Research Study: The econometric framework guides the empirical analysis of the economic impacts of international air transport service market liberalisation on the international air transport service. The econometric framework comprises cross-sectional econometric models that express demand and supply side variables of the international air transport service namely air passenger volume, passenger airfare, passenger departure frequency, and revenue passenger load factor as functions of international air transport service market liberalisation respectively. The cross-sectional models ease the empirical estimation of the economic impacts of international air transport service market liberalisation analysis. The cross-sectional models are essentially econometric transformations of the theories specific to the research study

(Abate, 2013; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Myburgh et al., 2006; Rowe, 2017; Wooldridge, 2015). The theories specific to the research study are reintroduced for ease of reference:

Theory of International Air Passenger Volume

$$PassVol = f(GDP \ Product, \ Distance, \ Bilateral \ Indicator)$$
(2)

Theory of International Passenger Airfare

$$Airfare \ per \ Kilometer = f(Distance, \ Bilateral \ Indicators) \tag{4}$$

Theory of International Passenger Departure Frequency

$$Frequency = f(Acsize, Distance, Operators, Bilateral Indicator)$$
(6)

Theory of International Revenue Passenger Load Factor

$$RPLFactor = f(Passenger Volume, Distance, Bilateral Indicator)$$
(8)

Theory of Direct Impact on Jobs in the T&T Industry

Direct Impact on Jobs = f(Average Impact of Liberalisation on Passenger Volumes) (9)

In theory, international air transport service market liberalisation influences international air passenger volume, international passenger airfare, international passenger departure frequency, international revenue passenger load factor, and direct jobs in the T&T industry. However, the theoretical models identified for the research study must be quantifiable if the theoretical models are to be instrumental for policymaking in the Southern African Development Community.

When setting a

policy, it is necessary that policymakers for the international air transport service business environment know the likely magnitudes of the impacts of the international air transport service market liberalisation. In these circumstances, researchers find it useful to employ econometrics to convert theoretical models into statistical models (Rowe, 2017). Due to limited scope of the research study, the research study will not discuss econometrics in detail. Researchers develop theoretical models of international air transport service market liberalisation to explain consistently recurring relationships among constructs in the international air transport service business environment. Theoretical models of international air transport services or concepts to other constructs in the international air transport services in the international air transport service business general propositions that link one or more constructs or concepts to other constructs in the international air transport service business environment. The theoretical models are developed basically to simplify the interpretation of recurring realities in the international air transport service business environment. However, theoretical models of international air transport service business environment. However, theoretical models of international air transport service business environment. However, theoretical models of international air transport service business environment. However, theoretical models of international air transport service business. Therefore, different researchers with different interpretations of reality are likely to make different judgments regarding what is necessary to explain their interpretations (Rowe, 2017).

Econometrics transforms theoretical models of international air transport service market liberalisation into statistically useful tools for policymaking. Econometrics converts theoretical models into econometric models that can be statistically estimated, and then be used to inform policymaking. The econometric models leverage regression analysis of the economic impacts of international air transport service market liberalisation. Policymakers rarely make meaningful policy decisions without use of econometric regression analysis to statistically assess the significance of the impacts of their policy decisions (Rowe, 2017; Wooldridge, 2015). However, it is worth mentioning that the econometric models of the research study involve independent variables other than the bilateral indicator variable (the regulatory status of the international air transport service market) to enhance the predictive power of the econometric models (InterVISTAS, 2006, 2015).

Multivariable Econometric Model 1 for International Air Passenger

Volume: The research study estimates the impact of international air transport service market liberalisation on international air passenger volume in the SADC through employing a theoretical model by InterVISTAS (2006, 2015). According to InterVISTAS (2006, 2014, 2015, 2017), the theoretical model for international air passenger volume is defined thus:

$$PassVol = f(GDP \ Product, \ Distance, \ Bilateral \ Indicator)$$
(2)

Where:

- PassVol is the international passenger volume of an airline operating on a specific international air transport market, and is the dependent variable of the model.
- GDP Product is the socio-economic variable that pertains to the product of the GDPs (Gross Domestic Products) of the two separate member countries of a given international air transport market.
- Distance is the geographical variable that pertains to the Great Circle Distance between a particular state-pair, built on the coordinates of the respective states. Each state is regarded as a single point, usually represented by its primary international airport.
- Bilateral Indicator is the dummy variable that pertains to the regulatory status of the bilateral air service agreement over a specific international air transport market.

InterVISTAS (2006, 2015) transform the theoretical model (Equation 2) for international passenger air passenger volume above into the log-log econometric model specified below:

 $\ln(PassVol) = \beta_0 + \beta_1 \ln(GDP \ Product) + \beta_2 \ln(Distance) +$

$$\beta$$
.(*Bilateral Indicator*) + $\beta_K \ln(Var_K)$ (11)

Where:

- In(PassVol) is the natural logarithm of the international passenger volume of an airline operating on a specific international air transport market, and is the dependent variable of the model.
- In(GDP Product) is the socio-economic variable that pertains to the natural logarithm of the product of the GDPs (Gross Domestic Products) of the two separate countries of a particular international air transport market.
- In(Distance) is the geographical variable that pertains to the natural logarithm of the entire Great Circle Distance in kilometers between the given state-pair, built on the coordinates of the respective states. Each state is regarded as a single point, usually represented by its primary international airport.
- Bilateral Indicator is the indicator variable that pertains to the regulatory status of the bilateral air service agreement over a specific international air transport market.
- In(Var_K) is the natural logarithm of unobserved measurable explanatory variables that contribute to the international air passenger volume.

This research expects the bilateral indicator to bear a positive regression coefficient. Liberalised international air transport markets grant freedoms that permit airlines to determine international passenger airfare, passenger air route, passenger capacity, departure frequency, and passenger airline market access and entry. For instance, the freedom to determine international passenger airfare, and the freedom to determine international passenger departure frequency would respectively promote competitive international passenger airfare and efficient international air transport service. Competitive international passenger airfare and efficient international air transport service would promote international air passenger volume (InterVISTAS, 2006, 2009,

2014, 2015, 2017).

Multivariable Econometric Model

2 for International Passenger Airfare: The research study estimates the impact of international air transport service market liberalisation on international passenger airfare in the SADC by applying a theoretical model by Myburgh et al. (2006). According to Myburgh et al. (2006), the theoretical model for international passenger airfare is defined as follows (Myburgh et al., 2006):

Airfare per Kilometer =
$$f(Distance, Bilateral Indicators)$$
 (4)

Where:

- Airfare per Kilometer is the international passenger airfare per kilometer on a specific international air transport market.
- ◆ Distance is the Great Circle Distance expressed in kilometers between a given country-pair.
- Bilateral Indicator is the dummy variable that indicates the regulatory status of bilateral air service agreement over a particular international air transport market.

Myburgh et al. (2006) transform the theoretical model (Equation 4) for international passenger airfare above into the linear-log econometric model defined below:

Airfare per Kilometer = $\beta_0 + \beta_1 \ln(Distance) + \beta_2 \ln(Distance^2) + \beta_2 \ln(Distance^2)$

 $\beta_{3}\ln(PassVolFit) + \beta_{.}(Bilateral Indicator) + \beta_{K}\ln(Var_{K})$ (12)

Where:

- Airfare per Kilometer is the international passenger airfare per kilometer on a given international air transport market.
- In(Distance) is the natural logarithm of the Great Circle Distance expressed in kilometers between a specific country-pair.

- In(Distance²) is the natural logarithm of the squared term of the Great Circle Distance between a particular country-pair.
- In(PassVolFit) is the natural logarithm of the fitted value of the international passenger volume of an airline operating on a given international air transport market.
- Bilateral Indicator is the dummy variable that indicates the regulatory status of the bilateral air service agreement over a given international air transport market.
- In(Var_K) is the natural logarithm of unobserved measurable explanatory variables that contribute to international passenger airfare.

Myburgh et al. (2006) include the fitted value 'PassVolFit' in a 2SLS regression in order to address the endogeneity that exists between international passenger airfare and international air passenger volume. The fitted value is estimated by the regression of Equation 11 in the first stage of 2-stage least-squares (2SLS) regression. The first stage of the 2SLS regression involves the regression of Equation 11 (PassVol). The second stage involves the regression of Equation 12 (Airfare per Kilometer) (Abate, 2013; Myburgh et al., 2006).

This research expects the bilateral indicator to bear a negative regression coefficient, and therefore, promote low international passenger airfare on a given international air transport market. Liberalised international air transport markets grant air traffic rights that permit airlines to determine international passenger departure frequency, passenger air route, passenger capacity, and passenger air transport market access and entry. For instance, international air transport markets that grant freedom of determining capacity would encourage airlines to capitalise on economies of scale by increasing capacity and offer low international passenger airfares (Myburgh et al., 2006). Multivariable Econometric

Model 3 for International Passenger Departure Frequency: The research study estimates the

impact of international air transport service market liberalisation on international passenger departure frequency in the SADC by applying theoretical model by Abate (2013). According to Abate (2013), the theoretical model for international passenger departure frequency is specified thus (Abate, 2013):

$$Frequency = f(Acsize, Distance, Operators, Bilateral Indicator)$$
(6)

Where:

- Frequency is the international passenger departure frequency of an airline operating on a particular international air transport market, and is the dependent variable of the model.
- Acsize (aircraft seat capacity) is the average number of seats per international passenger flight of an airline operating on a given international air transport market.
- Distance is the Great Circle Distance between the origin and the destination of a given international passenger flight.
- Operators are the number of airlines that operate on a particular international air transport market.
- Bilateral Indicator is the dummy variable that indicates the regulatory status of the bilateral air service agreement over a given international air transport market.

Abate (2013) transforms the theoretical model (Equation 6) for international passenger departure frequency above into the log-log econometric model specified below:

$$\ln(Frequency) = \beta_0 + \beta_1 \ln(Acsize) + \beta_2 \ln(Distance) + \beta_3 \ln(Operators) + \beta_4 \ln(PassVolFit) + \beta_.(Bilateral Indicator) + \beta_K \ln(Var_K)$$
(13)

Where:

- In(Frequency) is the natural logarithm of the international passenger departure frequency of an airline operating on a specific international air transport market, and is the dependent variable of the model.
- In(Acsize) is the natural logarithm of the average number of seats per international passenger flight of an airline operating on a given international air transport market.
- In(Distance) is the natural logarithm of the Great Circle Distance between the origin and the destination of a particular international passenger flight.
- In(Operators) is the natural logarithm of the number of airlines that operate on a given international air transport market.
- In(PassVolFit) is the natural logarithm of the fitted value of the international passenger volume of an airline operating on a given international air transport market.
- Bilateral Indicator is the dummy variable that indicates the status of bilateral air service agreement over an international air transport market.
- $\ln(Var_K)$ is the natural logarithm of unobserved measurable explanatory variables that contribute to the international passenger departure frequency.

Abate (2013) includes the fitted value 'PassVolFit' in a 2SLS regression in order to address the endogeneity that exists between international passenger departure frequency and international air passenger volume. The fitted value is estimated by the regression of Equation 11 in the first stage of 2-stage least-squares (2SLS) regression. The first stage of the 2SLS regression involves the regression of Equation 11 (PassVol). The second stage involves the regression of Equation 13 (Departure Frequency) (Abate, 2013; Myburgh et al., 2006). This research expects the bilateral indicator to bear a positive regression coefficient, and therefore, stimulate international passenger departure frequency on a particular international air transport market in the SADC. Liberalised international air transport markets grant freedoms that permit airlines to determine international passenger airfare, passenger air route, passenger capacity, and departure frequency. For example, the right to determine passenger departure frequency would enable airlines to offer higher passenger frequency, leading to an increase in international passenger departure frequency (Abate, 2013). Multivariable Econometric

Model 4 for International Revenue Passenger Load Factor: The research study estimates the impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines operating on international air transport markets in the SADC by applying a theoretical model by Abate and Christidis (2017, 2020). According to Abate and Christidis (2017, 2020), the theoretical model for international revenue passenger load factor is specified thus (Abate & Christidis, 2017, 2020):

RPLFactor = f(Passenger Volume, Distance, Bilateral Indicator) (8)

Where:

- RPLFactor is the international revenue passenger load factor of an airline operating a certain international air transport market, and is the dependent variable of the model.
- Passenger Volume is the volume of international revenue passengers of an airline operating on a specific international air transport market.
- Distance is the geographical variable that pertains to the Great Circle Distance between a particular state-pair, built on the coordinates of the respective states. Each state is regarded as a single point, usually represented by its primary international airport.
- Bilateral Indicator is the dummy variable that pertains to the regulatory status of the bilateral air service agreement over a specific international air transport market.

Abate and Christidis (2017; 2020) transform the theoretical model (Equation 8) for international revenue passenger load factor above into the log-log econometric model specified below:

$$\ln(RPLFactor) = \beta_0 + \beta_1 \ln(PassVol) + \beta_2 \ln(Distance) + \beta_3 \ln(Distance^2) + \beta_3 \ln(Di$$

$$\beta$$
.(Bilateral Indicator) + $\beta_K \ln(Var_K)$ (14)

Where:

- In(RPLFactor) is the natural logarithm of the international revenue passenger load factor of an airline operating on a particular international air transport market, and is the dependent variable of the model.
- In(PassVol) is the natural logarithm of the volume of international revenue passengers of an airline operating on a specific international air transport market.
- In(Distance) is the natural logarithm of the Great Circle Distance between a particular countrypair.
- In(Distance²) is the natural logarithm of the square of the Great Circle Distance between a given country-pair.
- Bilateral Indicator is the dummy variable that pertains to the regulatory status of the bilateral air service agreement over a specific international air transport market.
- $ln(Var_K)$ represents the natural logarithm of unobserved measurable covariates of the model.

This research study expects a positive regression coefficient of the bilateral indicator in the multivariable regression model. Liberalised international air transport markets grant freedoms that permit airlines to determine international passenger airfare, international passenger air route, and international passenger flight departure frequency. For example, the freedom to determine

international passenger airfare would enable SADC national airlines to offer competitive international passenger airfare. Competitive international passenger airfare would in turn enable SADC national airlines to promote international revenue passenger load factor (InterVISTAS, 2006, 2009, 2014, 2015, 2017; Myburgh et al., 2006). Multivariable

Product Model 5 for Direct Impact on Jobs in the T&T Industry: The research study estimates the direct impact of international air transport service market liberalisation on jobs in the travel and tourism (T&T) industry in the SADC by applying the model by Myburgh et al. (2006). The model for direct impact of international air transport service market liberalisation on jobs in the (T&T) industry is specified thus (Myburgh et al., 2006):

Direct Impact on Jobs = f(Direct Jobs in the Travel and Tourism Industry, Tourist Spending as % of Consumption in the Travel and Tourism Industry, Average Impact of Liberalisation on

Passenger Volume) (10)

Where:

- Direct Impact on Jobs is the amount of change directly caused on jobs in the travel and tourism industry, and is the dependent variable of the model.
- Direct Jobs in the Travel and Tourism Industry are direct jobs created in the in the T&T industry in a given country in the SADC.
- Tourist Spending is the tourist spending of tourists that travelled by air as a percentage of consumption in the SADC T&T industry.
- Average Impact of Liberalisation on Passenger Volume is the estimate of the average impact of liberalisation on international air passenger volume.

However, the direct impact of international air transport service market liberalisation on jobs in the T&T industry is a product function. Accordingly, the model for direct impact of

international air transport service market liberalisation on jobs in the T&T industry is mathematically defined as below (Myburgh et al., 2006):

Direct Impact on Jobs = PRODUCT(Direct Jobs in the Travel and Tourism Industry,

Tourist Spending as % of Consumption in the Travel and Tourism Industry,

Average Impact of Liberalisation on Passenger Volume \rightarrow

Direct Impact on Jobs = Direct Jobs in the Travel and Tourism Industry x

Tourist Spending as % of Consumption in the Travel and Tourism Industry x

Average Impact of Liberalisation on Passenger Volume (15)

Where:

- Direct Impact on Jobs is the amount of change directly caused on jobs in the travel and tourism industry, and is the dependent variable of the model.
- Direct Jobs in the Travel and Tourism Industry are direct jobs created in the in the T&T industry in a given country in the SADC.
- Tourist Spending is the tourist spending of tourists that travelled by air as a percentage of consumption in the SADC T&T industry.
- Average Impact of Liberalisation on Passenger Volumes is the estimate of the average impact of liberalisation on international air passenger volume.

This research study expects positive direct impact of international air transport service market liberalisation on employment in the SADC travel and tourism (T&T) industry. The research study expects the bilateral indicator to bear a positive regression coefficient. Liberalised international air transport markets grant freedoms that permit airlines to determine international passenger airfare, passenger air route, passenger capacity, departure frequency, and international air transport market access and entry. For example, the freedom to determine international passenger airfare would promote competitive international passenger airfare, thereby leading to decrease in international passenger airfare. Reduction in international passenger airfare would promote international air passenger volume (InterVISTAS, 2006, 2009, 2014, 2015, 2017; Myburgh et al., 2006).Myburgh et al., 2006).

Research Designs

Deciding on a quantitative approach to adopt is not enough; the research study further decides on the sort of research strategy to adopt within the quantitative research approach. Also known as strategy of inquiry, research design within a research approach gives specific direction for procedures in a particular research study. Descriptive, experimental, quasi-experimental, and secondary data analysis are some of the main designs within the quantitative approach (Cohen et al., 2017; Creswell & Creswell, 2017; Dawson, 2002). Below, the research study discusses these research designs, and selects an appropriate design.

The Descriptive Design: The descriptive research design mainly aims at providing an accurate portrayal of the characteristics and the frequency of occurrence of a phenomenon through employing statistics to describe and summarise the data. A descriptive research project is structured so that it provides systematic information about the phenomenon of interest (Creswell & Creswell, 2017; Daas & Arends-Tóth, 2012; Daas & Ossen, 2011; Ingham-Broomfield, 2014; Laitila et al., 2011; McKenzie, 2009).

The Experimental Design: Experimental design, also known as true experimentation, is a systematic and objective form of research in which the researcher manipulates the independent variable, and randomly subjects the dependent variable to varying conditions. Experimental design is employed to establish cause-effect relationships between variables of interest (Creswell & Creswell, 2017; Daas & Arends-Tóth, 2012; Daas & Ossen, 2011; Ingham-Broomfield, 2014; Laitila et al., 2011; McKenzie, 2009).

The Quasi-experimental Design: In the quasi-experimental design, the researcher has less control over the dependent variable than in experimental design. The researcher controls an independent variable but the dependent variable can hardly be randomised. Quasi-experimental design tries to establish cause-effect relationships between variables of interest (Creswell & Creswell, 2017; Daas & Arends-Tóth, 2012; Daas & Ossen, 2011; Ingham-Broomfield, 2014; Laitila et al., 2011; McKenzie, 2009).

The Secondary Data Analysis Design: Secondary data analysis is the research design that utilises quantitative data from an existing database that is compiled by someone else for some other purpose. Advances in technology have enabled easy access to huge quantities of data that have been acquired, integrated, and stored in databases by people or organizations in other studies. Secondary data analysis is a flexible and robust research design that can be applied in numerous ways. Secondary data analysis is popular because someone else has already collected the data, so the researcher does not have to dedicate vast amounts of energy, finances, time, and other resources for the data collection phase. The content of secondary data sources also mostly provides input for official statistics. However, the major challenge with secondary data analysis is that the researcher has no control over the quality of the data from existing databases (Creswell & Creswell, 2017; Daas & Arends-Tóth, 2012; Daas & Ossen, 2011; Ingham-Broomfield, 2014; Laitila et al., 2011; McKenzie, 2009).

The Design Selected for the Research Study

The research study considers the secondary data analysis design as an appropriate design.

The secondary data analysis design is a flexible and robust research design where the researcher does not have to dedicate vast amounts of energy, finances, time, and other resources for the data collection phase because someone else has already collected the data. The research study involves statistical data from existing databases that are compiled by other organisations (Cohen et al., 2017; Creswell & Creswell, 2017; Ingham-Broomfield, 2014).

researchers have successfully employed the secondary data analysis design in the air transport field. Some seminal research studies that have successfully employed the secondary data analysis design include Brattle Group (2002), InterVISTAS (2006), and Myburgh et al. (2006) in their respective studies titled "The economic impact of a EU-US Open Aviation Area"; "The Economic Impact of Air Service Liberalization"; and "Clear skies over southern Africa". Other renowned research studies that have successfully employed secondary data analysis design include Booz Allen Hamilton Limited (2007) in its study titled "The Economic Impacts of an Open Aviation Area between the EU and the US"; Peterson and Graham (2008) in their study titled "Open skies: an assessment of the US-EU open aviation area agreement"; Abate (2013) in his study titled "Economic Effects of Air Transport Liberalization in Africa"; and InterVISTAS (2015) in its study titled "The Economic Impact of Air Service Liberalization"; and Burghouwt et al. (2015) in their study titled "EU air transport liberalisation process, impacts and future considerations".

Population and Sample of the Research Study

In research, it is mostly unparalleled to use an entire population. It is impractical to include every element of the population because the population is finite. Instead of using the entire population, a researcher can use a sample (Babbie, 2010). This section discusses the populations and identifies an appropriate sample for the research study. A population is any number of a specific collection of entities such as objects, time units, prices of goods and services. A population may be referred to as a class or an infinite population. A class is a population with a finite number of members or units, while an infinite population is a population containing an infinite number of members or units. A population may also be referred to as existent or hypothetical. A population with existent members is referred to as an existent population, whereas the population with all possible chances in which an event can occur is referred to as a hypothetical population (Manna & Mete, 2021; Pandey & Pandey, 2015). A sample is a selected number of elements from an entire population. Something is known about the total population by simply studying the characteristics of the sample. It is assumed that what is discovered about the sample is true about the entire population. However, the truth about the total population depends on how representative and homogeneous the sample is. It is economical and efficient to employ sampling in research (Manna & Mete, 2021; Pandey & Pandey, 2015).

The current research study works with two types of population. The research study works with a population that comprises country-pairs in the Southern African Development Community. The country-pairs provide aggregate crosssectional data on various aspects of the international air transport service market in the SADC. They provide aggregate data on international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor. Accordingly, the research study identifies and examines a sample from the population of countrypairs in the SADC. The research study also works with a population that comprises secondary data sources. The secondary data sources are databases from which the aggregate data on international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor are accessed. Databases are compiled by
organisations such as the International Civil Aviation Organization (ICAO), the SADC Airlines, the World Development Indicators, the SADC Development Indicators, the United Nations Tourism Organization (UNWTO), and the World Travel and Tourism Council (WTTC). Therefore, the research study works with a sample from the population of secondary data sources.

The Population and Sample of Country-pairs of the Research study

This research study involves an existent finite population of country-pairs in the Southern African Development Community. The research study defines the population of the country-pairs as all country-pairs with signed bilateral air service agreements in the Southern African Development Community. There is a population of 49 country-pairs with signed bilateral air service agreements in the SADC (see Appendix B). However, the research study defines the sample of country-pairs under examination as country-pairs with operational signed bilateral air service agreements in the Southern African Development Community.

The Population and Sample of Secondary Data Sources of the Research Study

The study involves an existent finite population of secondary data sources. The research study defines the population of the secondary data sources as all non-published and published electronic and printed secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community. However, the research study defines the sample of secondary data sources for data collection as published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community.

Sampling Procedures

Sampling may be understood as the process of drawing a sample from a given population. It means selecting members from which the research study will actually collect data. Sampling involves two important processes: selection and estimation. Selection is the process of identifying members from which data will actually be collected. Estimation is the process of determining a likely value for a population parameter, for example true population mean, based on a random sample. Thus, sampling should exhibit as minimum selection and estimation errors as possible. The following are qualities of a good sample (Pandey & Pandey, 2015):

- ✤ A good sample is a true representation of the population.
- ✤ A good sample sub-aggregates properties of the population.
- ✤ A good sample is bias free.
- ✤ A good sample is objective.
- ✤ A good sample is accurate.
- ✤ A good sample exhibits comprehensiveness.
- ✤ A good sample exhibits practicability.

Research needs sampling for several reasons. Sampling makes research efficient. Sampling also makes research economical. Sampling enables detailed extraction of knowledge. Sampling is useful in secondary data analysis research. However, sampling exhibits some advantages and disadvantages. The following are some of the advantages and disadvantages of sampling (Pandey & Pandey, 2015):

- ✤ Advantages of Sampling
 - ➤ Sampling is adaptable.
 - ➤ Sampling is economical.

- Generalization is speedy with sampling.
- > Observation is precise and accurate with sampling.
- Research is efficient with sampling.

Disadvantages of Sampling

- Prone to selection biasness
- Prone to estimation error
- Difficult to draw a truly representative sample
- Needs eligible researchers
- > Instability or changeability of sample subjects or units in heterogeneous population
- Not possible in certain situations

A sampling procedure is a definite plan for obtaining a sample from a given population as a representative of the population. There are two main sampling procedures namely probability procedure and non-probability procedure (Manna & Mete, 2021; Pandey & Pandey, 2015).

The Probability Sampling Procedure: Probability sampling is a sampling procedure where every element in the population has an equal known non-zero chance of being selected. Probability sampling is popularly employed in quantitative research. The following are some of the reasons for opting for probability sampling in research (Manna & Mete, 2021; Pandey & Pandey, 2015):

- Probability sampling is used where the target and actual population sampled are the same.
- Probability sampling is used where the intension of the study is to identify cause-effect relationships.
- Probability sampling is employed where accuracy is paramount.

- Probability sampling is employed where there is need for greater flexibility.
- Probability sampling is used where the population is finite.
- Probability sampling is used where a research study intends to infer the parameters or characteristics of the sample to the general population.
- Probability sampling is employed where a research study has limited budget, time and workforce.
- Probability sampling is employed where there is need to test hypotheses formulated by nonprobability sampling.

The Non-probability Sampling Procedure: With non-probability sampling procedure, the research study uses its judgement to select information-rich elements of the population. This sampling procedure does not give all the elements in the population equal chances of being selected. Elements in the non-probability sample are mostly chosen basing on their accessibility or on the purposive judgment of the research study. In probability sampling, the probability of getting any particular sample may be calculated. However, this is not possible in non-probability sampling, in lieu, sampling adjusts to the research question (Manna & Mete, 2021; Pandey & Pandey, 2015).

The main gap with non-probability sampling is that an unknown section of elements of the whole population is not sampled. Therefore, a research study will not be able to infer the parameters or characteristics of the sample to the general population. For instance, a grounded theory may be developed through iterative non-probability sampling till saturation is reached theoretically. Non-probability sampling is popularly employed in qualitative research (Manna & Mete, 2021; Pandey & Pandey, 2015).

The following are some of the reasons for opting for non-probability sampling in research (Manna & Mete, 2021; Pandey & Pandey, 2015):

- Non-probability sampling is employed where there is need to demonstrate the existence of a certain trait in a population.
- ♦ Non-probability sampling is used where a decision is to be made quickly.
- Non-probability sampling is used where probability sampling is not possible, for instance, where the population is very small or almost infinite.
- Non-probability sampling is used where a research study does not intend to infer the parameters or characteristics of the sample to the general population.
- Non-probability sampling is employed where a research study has limited budget, time and workforce.
- Non-probability sampling is employed as an initial study to formulate hypotheses for testing.

The Sampling Procedure Selected for the Country-pairs

The research study defines the population of the country-pairs as all country-pairs with signed bilateral air service agreements, and identifies a population of 49 country-pairs with signed bilateral air service agreements in the SADC (Appendix B). The research study defines the sample as country-pairs with operational signed bilateral air service agreements in the SADC. The research study considers the non-probability sampling procedure as appropriate for identifying the sample of operational signed bilateral air service agreements in the SADC. The idea behind is to identify the unique sample of country-pairs with operational signed bilateral air service agreements in the SADC.

from the small distinct population of 49 country-pairs with signed bilateral air service agreements in the Southern African Development Community.

The Sampling Procedure for the Secondary Data Sources

The research study defines the population of the secondary data sources as all nonpublished and published electronic and printed secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the SADC. The research study defines the sample as published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the SADC. The research study views the non-probability sampling procedure as appropriate for identifying the sample of published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the SADC. The research study views the non-probability sampling procedure as appropriate for identifying the sample of published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the SADC. The idea behind is to identify the unique sample of published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the SADC. **Non-probability Sampling**

Techniques: The non-probability sampling procedure employs one of a number of sampling techniques depending on circumstances. Some non-probability sampling techniques are convenience sampling, snowball sampling, incidental sampling, and purposive sampling techniques (Manna & Mete, 2021; Pandey & Pandey, 2015). **The Convenience Sampling Technique:** Convenience sampling is a non-probability sampling technique where a research study selects members of a sample from a particular population only because the members are conveniently available to the research study. A research study selects members of the sample just because they are easy to recruit from the population, and the research study does not consider selecting a sample that represents the entire population (Manna & Mete, 2021; Pandey & Pandey,

2015). **The Snowball Sampling Technique:** When a sample is difficult to locate, a research study employs snowball sampling to locate the sample. When a sample size is small and not easily available, research studies opt for employing snowball sampling technique. Snowball sampling is a referral sort of system of sampling. Once the research study finds appropriate members, it requests the members to assist in seeking similar members in order to increase the size to a considerable size (Manna & Mete, 2021; Pandey & Pandey, 2015).

The Incidental Sampling Technique: Samples that are taken because they are most frequently available are referred to as incidental or accidental samples. For instance, collections of individuals or units which are employed as samples of a population because they are readily available are termed incidental or accidental samples. Incidental sampling is an easy sampling approach. It is also an economical and efficient sampling method. However, incidental sampling technique is hardly representative of the population, and is not suitable for parametric statistics (Manna & Mete, 2021; Pandey & Pandey, 2015).

The Purposive Sampling Technique: Since it is known to be representative of the total population, purposive sampling is selected by some arbitrary method. The idea behind is to draw a sample with regard to a criterion which is believed to be important for the given study. Purposive sampling involves selecting a group of units basing on available information to represent an entire population. A group of units may also be drawn from a population basing on intuition or criterion believed to be self-evident (Manna & Mete, 2021; Pandey & Pandey, 2015). The Non-probability Sampling Technique Selected for the Country-pairs: The sample is country-pairs with operational signed bilateral air service agreements in the Southern African Development Community. The research study considers the purposive sampling technique as appropriate for identifying the sample of country-pairs with operational signed bilateral air service agreements in the service agreements in the service agreements in the sample of country-pairs with operational signed bilateral air service agreements in the se

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the Southern African Development Community. The idea behind is to identify the sample of country-pairs with operational signed bilateral air service agreements, the criterion believed to be important for the research study. **Purposive Sampling Techniques:** Purposive sampling employs one of a number of approaches depending on available needs.

Purposive sampling employs one of a number of approaches depending on available needs. Purposive sampling approaches include typical case sampling technique, extreme case sampling technique, heterogeneous variation sampling technique, homogeneous sampling technique, and total population purposive sampling approach (Manna & Mete, 2021; Pandey & Pandey, 2015).

The Typical Case Sampling Technique: Purposive

sampling may employ typical case sampling technique. Typical case purposive sampling technique is employed when a research study is interested in investigating a phenomenon as it relates to what are regarded as typical or average members of the effected population. Therefore, a study derives samples from cases that are regarded as average or typical in a given population (Manna & Mete, 2021; Pandey & Pandey, 2015).

The Extreme Case Sampling Technique: This purposive sampling technique is employed when a research study is interested in investigating outliers that diverge from the norm as regards a particular phenomenon. By investigating the extreme cases, research studies can often gain a better understanding of the more regular patterns of behavior. Thus, a study derives samples from cases that are regarded as unusual in a given population (Manna & Mete, 2021; Pandey & Pandey, 2015). *The*

Homogeneous Sampling Technique: A homogeneous purposive sample is one that is selected for having a shared characteristic or set of characteristics. For example, a research may be interested to understand what the significance of international air transport service market liberalisation means to liberal international air transport service markets and, so the study interviews liberal

international air transport service markets about this. This is a homogenous sample developed on the basis of liberalisation (Manna & Mete, 2021; Pandey & Pandey, 2015).*The Heterogeneous Sampling Technique:* The heterogeneous purposive sampling technique depends on the judgement of the researcher to choose units with various characteristics from a population. This ensures the existence of maximum diversification within the data (Manna & Mete, 2021; Pandey & Pandey, 2015). *The Total Population*

Sampling Technique: This technique of purposive sampling focuses on one specific subgroup in which all the sample members are characteristically similar. A research study is interested in examining the entire population whose members have one or more shared distinct characteristics. Total population purposive sampling technique is commonly employed to study a particular group within a larger population (Manna & Mete, 2021; Pandey & Pandey, 2015).

The Purposive Sampling

Technique Selected for the Research Study: The research study considers the total population purposive sampling approach as appropriate to identify the sample. The idea behind is to identify the entire population of country-pairs with operational signed bilateral air service agreements from the population of 49 country-pairs with signed bilateral air service agreements in the Southern African Development Community (Appendices B and D). The research study identifies the total population sample of 38 country-pairs with operational signed bilateral air service agreements (Appendix E7) in the SADC. The total population sample of 38 country-pairs with operational signed of the population sample of a service agreements represents over 78% of the population.

Restrictive and Liberal International Air Transport

Service Markets: The research study identifies restrictive and liberal international air transport service markets from the sample of 38 country-pairs with operational signed bilateral air service

agreements in the SADC. This research study employs the cross-sectional approach for the evaluation of the economic impacts of international air transport service market liberalisation on the international air transport service. The cross-sectional approach relies on comparing the impacts of liberal international air transport markets to the impacts of restrictive international air transport markets (InterVISTAS, 2006, 2015). Therefore, the cross-sectional approach requires the research study to identify restrictive and liberal international air transport service markets from the sample of 38 country-pairs with operational signed bilateral air service agreements to provide a source of comparison between the economic impacts of liberal international air transport markets in country-pairs with operational signed bilateral air service agreements.

In defining liberal and restrictive international air transport service markets in country-pairs with operational signed bilateral air service agreements, this research study defines five categorisations of liberal statuses of an international air transport service market basing on designation, international passenger capacity, international passenger departure frequency, freedoms of the air, and international passenger airfare between members of the country-pair. The research study defines an international air transport service market in a country-pair as permissive if designation of carrier operators on the international air transport service market is multiple; otherwise the international air transport service market is restrictive between members of the country-pair. The study defines an international air transport service market as flexible if the international air transport service market offers free determination of aircraft capacity; otherwise the international air transport service market is restrictive. An international air transport service market is tolerant if the international air transport service market does not interfere with the options of departure frequency, but if it does, the international air transport service market is restrictive.

An international air transport service market is considered permissive if the international air transport service market provides fifth freedom of the air (see Appendix C) to all points in the SADC; otherwise the international air transport service market is restrictive. The research study defines an international air transport service market as flexible if there is free pricing, or if both partners of the international air transport service market can disapprove and invalidate an airfare charged by airlines, otherwise the international air transport service market service market is restrictive.

of restrictive and liberal statuses of an international air transport service market, an international air transport service market is overall considered liberal (designated 1 as an indicator variable) if the international air transport service market has attained two or more of these liberal statuses, otherwise the international air transport service market is overall considered restrictive (designated 0 as an indicator variable) between members of the country-pair. Employing the total population purposive sampling technique, the research study identifies a total population of 21 liberal international air transport service markets, and a total population of 17 restrictive international air transport service markets in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community (see Appendix E7).

The Non-probability Sampling Technique Selected for the Secondary Data Sources: The sample is published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the SADC. The research study considers the convenience sampling technique as appropriate for identifying the sample. The idea behind is to identify conveniently available published and nonpublished electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the SADC.

Published and non-published electronic secondary sources of data on the research variables

According to the possible five categorisations

in country-pairs with operational signed bilateral air service agreements in the SADC are available in the public domain. Published and non-published electronic secondary data sources for open access are available for free in electronic libraries and the Internet. Permission for published and non-published electronic secondary data sources that are available for free access in the public domain such as electronic libraries and the Internet is assumed. As the Internet and electronic libraries are emerging more advanced, reachable and fast to the masses, a variety of published electronic sources of secondary data are available for different research topics. Published sources may be paid or free depending on the writer and the publishing organisation's decision. The authenticity of the data generated from published electronic sources depends mainly on the author and the publisher. Published electronic sources are available electronically to the masses through electronic sources such as e-documents, e-journals/periodicals, general websites, weblogs, and podcasts (Babbie, 2010; Kabir, 2016; McCaston, 2005; Pandey & Pandey, 2015; van Nederpelt & Daas, 2012). Published electronic documents are built by reputable institutions some of which include the International Civil Aviation Organization (ICAO), the World Development Indicators, the SADC Development Indicators, the United Nations Tourism Organization (UNWTO), and the World Travel and Tourism Council (WTTC).

ICAO: The International Civil Aviation Organization (ICAO) is the traditional source of secondary data on international air traffic. ICAO compiles statistical data on air traffic from Contracting States. However, these data are not sufficiently complete, accurate, or reliable, especially in developing countries where statistical capacity is often limited due to lack of training and funding (Schlumberger, 2009).

- IATA: Though difficult to access, the International Air Transport Association (IATA) is another standard source of secondary data on air traffic. Just like the ICAO, the IATA develops air traffic statistical databases on data compiled by its member States (Schlumberger, 2009).
- SADC Countries: Civil aviation authorities in the Southern African Development Community (SADC) also provide reliable data on scheduled and advertised air traffic. Some member states in the SADC maintain some air transport statistical databases that reflect actual passengers carried, though sometimes difficult to access (Myburgh et al., 2006).
- SADC Airlines: In developing countries such as the SADC, official airline schedules that are in the public domain are the best source of air traffic data. However, the limitation of data published by airlines is the fact that only aircraft capacities offered are captured and not actual passenger volumes (Schlumberger, 2009).
- World Development Indicators: The World Development Indicators is the prominent source of socio-economic data such as population, GDP and trade. The World Development Indicators offers credible and accurate socio-economic data on countries in the Southern African Development Community (InterVISTAS, 2015; Myburgh et al., 2006).
- SADC Development Indicators: Another source of socio-economic data on countries in the Southern African Development Community is the SADC Development Indicators. The SADC Development Indicators provide reliable and robust data on populations, GDP, and trade in the SADC (InterVISTAS, 2015; Myburgh et al., 2006).
- United Nations World Tourism Organization (UNWTO): The United Nations World Tourism Organization (UNWTO) compiles reliable data on tourism in the Southern African Development Community. UNWTO undertakes research on the economic impact of travel and tourism in the world (Myburgh et al., 2006).

- World Travel and Tourism Council (WTTC): The World Travel and Tourism Council (WTTC) also provides reliable data on tourism in the Southern African Development Community.
 WTTC undertakes research on the economic impact of travel and tourism in the world (Myburgh et al., 2006).
- Other Researchers: Other researchers in the air transport field are a reliable source of data on intra-SADC international air traffic data. Reputable researchers such as InterVISTAS, Deloitte, Myburgh et al., Schlumberger, Abate, and Muvingi provide trustworthy data on air traffic in the Southern African Development Community.

As far as secondary data collection is concerned, e-journals are gradually becoming more useful than printed journals today. E-journals are generally more reachable and fast to the masses than printed journals. A researcher can retrieve and print any latest journals without subscription so long as his/her university has an e-library. E-journals give up-to-date information as they are updated periodically with new publications. Journals are usually more specific than books (Babbie, 2010; Kabir, 2016; McCaston, 2005; Pandey & Pandey, 2015; van Nederpelt & Daas, 2012).

Content on

websites should be checked for reliability before use as the content is generally not reliable. Nonetheless, some websites can be trusted by researchers because they are regulated and only share authentic data. Most of these regulated websites belong to government or private organizations, and their data are paid for. The information shared on unregulated websites is usually untrusted (Babbie, 2010; Kabir, 2016; McCaston, 2005; Pandey & Pandey, 2015; van Nederpelt & Daas, 2012). Weblogs are one of the most common online sources for data and may even be less authentic than websites.

Weblogs are in an actual sense diaries produced by different people. Nevertheless, these diaries

are to a certain extent reliable to use, but cannot always be trusted for research use (Babbie, 2010; Kabir, 2016; McCaston, 2005; Pandey & Pandey, 2015; van Nederpelt & Daas, 2012).

Data sources that are gradually becoming an alternative source of information to radio these days are podcasts. Podcasts are more or less like online radio stations, and information shared through podcasts can be collected for use in research (Babbie, 2010; Kabir, 2016; McCaston, 2005; Pandey & Pandey, 2015; van Nederpelt & Daas, 2012).

Instrumentation of Research Tools

The process of gathering and measuring information on variables of interest is referred to as data collection. Data collection is performed in an established systematic manner that enables a research study to give solutions to research questions and/or hypotheses. Data collection is the component of a research process, common to all disciplines of study. However, the emphasis on ensuring accurate and honest data collection remains the same, despite the fact that methods of data collection are different for different disciplines. The essence of data collection is to acquire quality evidence from appropriate secondary data sources for reliable and valid data analysis, and development of a credible and convincing answer to a research question (Babbie, 2010; Kabir, 2016; Pandey & Pandey, 2015). The following briefly discusses some research tools, and selects appropriate research tools to access secondary data from non-published and published electronic sources, and from non-published and published printed sources.

Research Tools

Research tools are the devices that are employed in data collection. For accurate and honest secondary data collection, the researcher must make sure that the tools identified for secondary data collection are valid and reliable. The validity and reliability of any research depends to a large

degree on the appropriateness of the tools. Whatever procedure a research study employs to collect secondary data, the procedure must be critically assessed to ensure how appropriate it is likely going to provide expected results. Common electronic secondary data collection tools include the Internet, libraries, archives, schools and organizations (Babbie, 2010; Kabir, 2016; Pandey & Pandey, 2015): The Internet: The

Internet is the modern convenient technology that provides access to online data. The Internet provides access to sources of large pools of both free and paid secondary data. The Internet is a readily available research tool for a research study. **The Government and Non-government Archives:** A researcher can access useful verifiable secondary data from government and non-government archives. However, government and non-government archives are in many cases paid for. **The Libraries:** Secondary data can be accessed via information storehouses such as public and private libraries. In different research contexts, libraries provide an aggregation of vital information that serves as valid and reliable data.

The Institutions of Learning: Learning institutions such as faculties, colleges and schools provide access to secondary data in research. Academic institutions conduct more research than any other institutions.

Tools Selected for the Research Study

The Internet is viewed as a readily available tool for accessing secondary data from published and non-published electronic sources. The Internet is a valid and reliable tool for electronic secondary data collection. The advent of the Internet has made access to large pools of electronic secondary data easy and ready. The research study also views electronic libraries as appropriate tools for accessing published and non-published electronic secondary data sources. Civil aviation authorities in the SADC establish electronic libraries that provide access to nonpublished and published electronic secondary data sources.

Operational Definition of Variables

One of the vital challenges to validly achieve the objectives of a research study is to operationally define variables in the research study (Gujarati & Porter, 1999). An operational definition may be defined as a statement of the description of a variable in a specific research study. A valid study contains operational definitions of the variables in the research study. Operational definitions allow researchers to describe in a specific way what they mean when they employ a certain term in a given research context. When applied in data collection, operational definitions are a clear, and concise detailed definition of a measure. Operational definitions are essential for researchers to collect data in the same way as they help the researchers have the same understanding of the terms employed in the research study. Therefore, operational definitions are made before data collection begins (Tokunaga & Rains, 2016). The variables operationally defined for the research study are identified from the econometric models of the study. It is worth noting that the econometric models of the research study involve independent variables other than the bilateral indicator variable to enhance the predictive power of the econometric models (InterVISTAS, 2006, 2015). For ease of reference, the econometric models are reintroduced thus:

1. Multivariable Econometric Model 1 for Hypothesis 1

$$\ln(PassVol) = \beta_0 + \beta_1 \ln(GDP \ Product) + \beta_2 \ln(Distance) + \beta_2$$

 β .(Bilateral Indicators) (11)

2. Multivariable Econometric Model 2 for Hypothesis 2

Airfare per Kilometer = $\beta_0 + \beta_1 \ln(Distance) + \beta_2 \ln(Distance^2) + \beta_2 \ln(Distance^2)$

$$\beta_{3}\ln(PassVolFit) + \beta.(Bilateral Indicators)$$
 (12)

3. Multivariable Econometric Model 3 for Hypothesis 3

$$\ln(Frequency) = \beta_0 + \beta_1 \ln(Acsize) + \beta_2 \ln(Distance) + \beta_3 \ln(Operators) + \beta_2 \ln(Operators) + \beta_3 \ln(Operato$$

$$\beta_4 \ln(PassVolFit) + \beta.(Bilateral Indicator)$$
 (13)

4. Multivariable Econometric Model 3 for Hypothesis 4

$$\ln(RPLFactor) = \beta_0 + \beta_1 \ln(PassVol) + \beta_2 \ln(Distance) + \beta_3 \ln(Distance^2) + \beta_2 \ln(Distance^2) + \beta_3 \ln(Di$$

$$\beta.(Bilateral Indicator) \tag{14}$$

5. Multivariable Econometric Model 5 for Hypothesis 5

 $\Delta Direct Jobs = Direct Jobs in the Travel and Tourism Industry x$

Tourist Spending as % of Consumption in the Travel and Tourism Industry x

Average Impact of Liberalization on Passenger Volumes (15)

Some variables involved in the econometric models above include international air passenger volume, international passenger airfare, international passenger departure frequency, international passenger flight, aircraft size, bilateral air service indicator, international airline, distance, employment, gross domestic product (GDP), trade, population, air tourist spending, and international revenue passenger load factor. The variables are operationally defined thus:

Gross Domestic Product (GDP). Operational Definition

According to Fernando (2021), gross domestic product (GDP) is conceptually defined as the total monetary or market value of all the finished goods and services produced within a country's borders in a specific period of time. In this particular research study, however, GDP Product (US\$) (Independent) is operationally defined as the product of yearly GDPs of two destination nations in a state-pair (InterVISTAS, 2006, 2015). It is a quantifiable nominal variable whose data are secondary statistical data (InterVISTAS, 2006, 2015) obtained from several databases for corroboration.

Distance. Operational Definition

According to the Cambridge English Dictionary, distance is conceptually defined as the amount of space between two places. In this specific research study, distance (Independent) is operationally defined as the Great Circle Distance expressed on an international air route (Myburgh et al., 2006). It is a quantifiable nominal variable whose data are archival secondary statistical data (Myburgh et al., 2006) obtained from several sources for corroboration.

Bilateral Indicator. Operational Definition

Heumann and Schomaker (2016) conceptually define bilateral indicator or dummy variable as a variable that indicates the existence or absence of an attribute (Heumann & Schomaker, 2016). In this research study, bilateral indicator or dummy variable (Independent) operationally indicates the liberal and restrictive statuses of international air transport service markets between countrypairs (InterVISTAS, 2006, 2015). It is a numeric nominal variable (InterVISTAS, 2006, 2015) whose data are acquired from several secondary sources for corroboration. In this particular research study, the bilateral indicator is the variable of interest that defines international air transport service market liberalisation. It is defined by a "0" and a "1", and the "0" indicates restrictive international air transport service market, while the "1" indicates liberal international air transport service market.

Passenger Volume (PassVol). Operational Definition

PassVol (Passenger Volume) is the measurable variable of international air passenger

demand. According to Moon et al. (2011), passenger demand is conceptually defined as the maximum volume of passengers entering a given sector in a given period of time (Moon et al., 2011). In this particular research study, however, PassVol (Dependent) is operationally defined as the maximum volume of international revenue passenger seats performed per year by an airline operating on an international route (InterVISTAS, 2006, 2015). It is a quantifiable nominal variable whose data are secondary statistical data (InterVISTAS, 2006, 2015) obtained from several archives for triangulation.

Passenger Volume Fitted Values (PassVolFit). Operational Definition

Passenger volume fitted values (PassVolFit) (Independent) are the fitted values of international air passenger volumes estimated by the first stage of 2-stage least squares (2SLS) regression analysis. In this research study, the first stage of the 2SLS regression analysis is the regression of the international air passenger volume model (Equation 11). Therefore, PassVolFit is a quantifiable nominal variable whose data are estimated from the regression of Equation 11 (InterVISTAS, 2006, 2015; Myburgh et al., 2006).

Airfare. Operational Definition

According to the Cambridge English Dictionary, airfare is conceptually defined as the price of a journey by an aeroplane. In this specific research study, however, airfare (Dependent) is operationally defined as the cheapest airfare per km for a given route between two destinations (Myburgh et al., 2006). It is a quantifiable nominal variable whose data are secondary statistical data (Myburgh et al., 2006) obtained from a number of secondary sources for corroboration.

Aircraft Size (Acsize). Operational Definition

According to Wei and Hansen (2003), aircraft size or seat capacity is conceptually defined as the maximum number of seats carried by an aircraft (Wei & Hansen, 2003). In this research study, aircraft size or seat capacity (Acsize) (Independent) is operationally defined as the average number of seats per international flight (Abate, 2013). This is a quantifiable nominal variable (Abate, 2013) whose data are secondary statistical data acquired from several sources for corroboration.

Operators. Operational Definition

In his study, Abate (2013) defines operators (Independent) as the number of airlines operating on an international route. In this particular research study, operators (Independent) are defined as the number of scheduled and advertised international passenger airlines operating on an international route. This is a quantifiable nominal variable whose data are secondary statistical data obtained from several sources for triangulation.

Passenger Departure Frequency (Frequency). Operational Definition

Abate (2013) defines passenger departure frequency as the average number of international flights performed by an international airline (Abate, 2013). In this specific research study, departure frequency (Dependent) is operationally defined as the average number of scheduled and advertised international flights performed by an international airline. Departure frequency is a quantifiable nominal variable whose data are secondary statistical data acquired from several archival sources for triangulation.

International Revenue Passenger Load Factor (RPLFactor). Operational Definition

In this research study, the international revenue passenger load factor (Dependent) of an airline is operationally defined as the ratio of the number of international revenue passenger kilometers occupied by the airline, to the number of international seat kilometers available for occupancy (Schlumberger, 2009). The international revenue passenger load factor is a quantifiable

nominal variable whose data are secondary statistical data obtained from a number of secondary sources for triangulation.

Direct Jobs. Operational Definition

Adamson and Roper (2019) conceptually define job as a relationship between two parties, where work is paid for, and where one party is the employer and the other is the employee. In this particular thesis study, however, direct jobs (Independent) are operationally defined as direct jobs in the travel and tourism (T&T) industry (Myburgh et al., 2006). This is a quantifiable nominal variable (Myburgh et al., 2006) whose data are archival secondary statistical data obtained from several databases for triangulation.

Tourist Spending as % of Consumption in the T&T Industry. Operational Definition In this

research, tourist spending (Independent) is operationally defined as the spending of international tourists that travelled by air, expressed as a percentage of consumption in the travel and tourism (T&T) industry (Myburgh et al., 2006). This is a quantifiable nominal variable (Myburgh et al., 2006) whose data are secondary statistical data sourced from a number of databases for triangulation.

Impact on Passenger Volumes. Operational Definition

In this specific research study, impact on passenger volumes (Independent) is operationally defined as the estimate of the impact of international air transport service market liberalisation on international revenue passenger seat capacity of an aircraft operating on a specific international route (Myburgh et al., 2006). It is a quantifiable nominal variable (Myburgh et al., 2006) whose data are estimated from the regression of Equation 11.

△Direct Jobs. Operational Definition

In the current research study, impact on direct jobs (Dependent) is operationally defined as the amount of change in direct jobs generated in the travel and tourism (T&T) industry (Myburgh et al., 2006). This is a quantifiable nominal variable whose data are secondary statistical data acquired from several archival sources for triangulation.

Study Procedures and Ethical Assurances

Upon the Unicaf Research Ethics Committee (UREC) formally approving the Research Ethics Application Form (REAF) for the research (see Appendix G), what follows for the research study are secondary data collection and analysis. The current research study employs the secondary data analysis design within the quantitative approach. Majority

researchers and professionals believe that the employment of secondary data relieves the researcher from the responsibility of seeking ethical approval. However, the research process involves ethical considerations, regardless of whether the research involves secondary or primary data collection. Ethical considerations start from the initial design of the research study through to the communication of results to ensure transparency, publicness and replicability (Johnston, 2017; Koziol & Arthur, 2011; Law, 2006; Tripathy, 2013). Secondary

data assume different forms. There are secondary data that contain personal and/or sensitive personal data. Research that intends to use secondary data that contain personal sensitive data for the secondary data analysis design requires ethical review and approval. Apart from need for approval, sensitive personal data are subject to disclosure controls. There are secondary data for open access. Secondary databases for open access are available in the public domain and are considered free for access, though some may require registration. There are also purchased and/or licensed secondary data. Secondary researchers must adhere to the terms and conditions of the

license provided by the supplier or source of purchased data. The license sets limits on the use, processing, sharing, or distribution of the purchased secondary data. There are also restricted data. Restricted data such as administrative data, medical data, social security data, criminal justice system data, and educational data require access in safe haven. Such data are subject to strict disclosure controls (Johnston, 2017; Koziol & Arthur, 2011; Law, 2006; Tripathy, 2013).

involves secondary data that are for open access and are available in the public domain. The research study also involves purchased and licensed secondary data and, therefore, adheres to the terms of the license provided by the sources of the data. The secondary data contain no identifying information of human subjects and, therefore, require no ethical review and approval. The research study does not involve restricted secondary data that require access in safe haven such as administrative data, medical data, social security data, criminal justice system data, or educational data.

Ethical Assurances

Adherence to ethical norms in research is of utmost importance for a number of reasons. Firstly, the purpose of research including knowledge development, truth advancement, and error avoidance are promoted. Ethical principles such as prohibiting fabrication, falsification, or misrepresentation of research data encourage truth advancement and error avoidance. Secondly, ethical principles promote essential values for collaborative work such as trust, accountability, mutual respect, and fairness as research usually involves a high degree of cooperation and coordination amongst different players in different disciplines and institutions. Guidelines for

The current research study

authorship, copyright and patenting policies, data sharing policies, and confidentiality rules in peer review, are some examples of ethical norms that are crafted to simultaneously protect intellectual property interests and to promote collaboration. Majority of researchers feel on top of the world when applauded for their contributions, and get disheartened when their intellectual property is let public prematurely, stolen, or plagiarised. Thirdly, the ethical principles ensure that the public should be able to hold researchers accountable when necessary. Fourthly, public support for research is developed when there are clear ethical standards for research. When the quality and integrity of the research are trusted by the public, the public is likely to fund the research project. Finally, a variety of many other important moral and social values, for instance, social responsibility, human rights, animal welfare, compliance with the law, and health and safety values are promoted by majority of the ethical principles designed for good research practice. Thus, any lapses in research ethics may result in significant harm on human and animal participants, as well as other people. A researcher, who, for instance, ignores regulations and guidelines related to radiation safety, may expose himself or others to danger (Kabir, 2016). Generally, ethical norms promote sanity in research. Thus, it should emerge as no revelation that majority of various professional research associations, government research agencies, and academic institutions have crafted special codes, rules, and policies associated with ethics for the conduct of research. A rough and general overview of some ethical assurances that the current research study strives to address is as follows (Kabir, 2016):

Honesty: The current research study tries as much as possible to be honest in any scientific reporting. Reporting of data, methods and procedures, results, and publication status must be honest as much as possible. Deceiving colleagues, granting agencies or the public is prohibited. Honesty is the principle that generally prohibits all types of scientific publication malpractices such as falsifying, fabricating, and/or misrepresentation of data or results.

- Objectivity: In any other aspect of research where objectivity is expected or required, for instance, in peer review; grant writing; personnel decisions; expert testimony; experimental design; data analysis; and data interpretation, a research study must try as much as possible to maximise objectivity. The current research study strives to maximise objectivity in data analysis and data interpretation through mitigating bias or deceit. Personal or financial interests that have a bearing on the research are disclosed at all cost.
- Integrity: The research study strives to adhere to promises and agreements; tries as much as possible to behave sincerely; and be as consistent as possible. The research study actively adheres to the ethical principles and professional standards that are essential for the responsible conduct of the research. Responsible conduct of the research forms the core of the principle of integrity in the research.
- Carefulness: The research study tries as much as possible to minimise errors due to carelessness; and makes sure to carefully review his work. The study keeps records of the research activities including research design, data collection, and correspondence with other agencies in safe custody.
- Openness: The research study strives to be open by sharing data, results, ideas, tools and resources. The study is ready to accept new ideas and criticism. It tries as much as possible to respect all forms of intellectual property such as patents and copyrights, and seeks permission to use unpublished data, methods, and/or results. Good research conduct also covers acknowledgement of other people's contributions to knowledge.

- Confidentiality: The research study tries as much as possible to safeguard confidential communications including personnel records, grants for publication, and trade records. The study strives to safeguard the confidentiality of information throughout all stages of the research process including initial collection of data, analysis of the data, dissemination of findings, storage of information, and disposal of media on which information is stored.
- Responsible Publication: A responsibility for all research studies is the final stage of research referred to as publication. The current research study aims to produce a scholarly publication that provides a comprehensive and permanent research record as expected by the public. Publications affect not only the research community but also the society at large because they form the basis for new research. Therefore, the study strives for responsible publication to ensure honest, clear, accurate, complete and balanced dissemination of information. Responsible publications advance research and scholarship, and avoid wasteful and duplicative dissemination of information.
- Social Responsibility: The research study tries as much as possible to advance social good.
- Non-discrimination: The study understands the evils of any form of discrimination. Therefore, the research study avoids discrimination on the basis of sex, race, and ethnicity at all cost.
- Competence: The research study tries as much as possible to maintain and improve his/her competence and expertise in research through learning and practice.
- Legality: The current research study knows and obeys relevant laws and institutional and governmental policies. The study understands legality as acts, agreements, or contracts that are consistent with the law in a given construct of power and jurisdiction.

Researchers that are exposed to training on research ethics are able to confront ethical dilemmas. Such training exposures introduce researchers to significant concepts and methods that can be employed to resolve such ethical dilemmas (Kabir, 2016).

Data Collection and Analysis

Data collection is the process by which information on variables of interest in research is gathered and measured. Data analysis is the process by which research draws meaningful insights from the collected data. Research uses these insights to make conclusions and propose the best course of direction. Therefore, data collection and analysis are critical inseparable processes for successful research (Wooldridge, 2015).

Data Collection

This research collects and analyses secondary statistical data. Data are referred to as secondary data so long as a researcher or analyst designs questions that are addressed through analysis of data obtained by a person or an organisation other than the researcher. In lieu, statistics that were previously compiled by other people or organisations for other purposes are secondary data (Johnston, 2017; Koziol & Arthur, 2011; Law, 2006; Tripathy, 2013). The research study views secondary data over the period 2011-2015 appropriately updated for the investigation into the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. At the approval of the research study by the Unicaf Research Ethics Committee (UREC) in in April 2021, the research study tried to survey cross-sectional air traffic secondary data over the period 2000-2021 in the SADC. However, the period that provides satisfactorily enough updated cross-sectional air traffic secondary statistical data on all these variables and/or their proxies is the period over 2011-2015..

sectional econometric models. Therefore, the research study collects cross-sectional secondary data on research variables some of which include international passenger air passenger volumes, international passenger airfares, international passenger departure frequencies, international passenger flights, aircraft sizes, bilateral indicators, international airlines, distances, employment, gross domestic products (GDPs), trade, populations, air tourist spending, and international revenue passenger load factors. Below, the research study discusses triangulation approaches, and selects a triangulation approach to enhance reliability and validity of the research results.

Triangulation Approaches: The research study views published electronic secondary data sources as appropriate sources for the research study. The research study employs the Internet to access secondary databases from the published and non-published electronic secondary data sources. However, the research study employs triangulation to enhance the reliability and validity of the research study results (Heale & Forbes, 2013; Olsen, 2004; Rugg, 2010).

In social science research, triangulation may be understood as the integration of data, methods, investigators, or theories so that diverse viewpoints or standpoints cast light on a particular topic. There continues to be an outstanding consensus on the usefulness of data, methods, investigators, and theories triangulation approaches in the social sciences (Heale & Forbes, 2013; Olsen, 2004; Rugg, 2010).

The Data Triangulation Approach: The use of two or more different data sources with the purpose of enhancing reliability and validity of study results in order to strengthen conclusions about findings and to reduce the risk of false interpretations in a research study is known as data triangulation. In data triangulation, the validity and reliability of study results is increased by corroborating findings from the data sources. The strengths in the data from one source compensate

The Methods

Triangulation Approach: The use of two or more methods to study a particular phenomenon with the purpose of increasing reliability and validity of study results is known as methods triangulation. Reliability and validity are enhanced by decreasing the deficiencies and biases that emerge from the use of a single method. Any weaknesses of one method can be compensated for by the strengths of the other method (Heale & Forbes, 2013; Olsen, 2004; Rugg, 2010).

The Investigators

Triangulation Approach: The use of more than one investigator, interviewer, observer, researcher or data analyst with the purpose of enhancing reliability and validity of study results is called investigator triangulation. In investigator triangulation, the credibility of the study findings can be enhanced only when findings across investigators can be confirmed without prior discussion or collaboration between the investigators. Investigator triangulation reduces bias in collecting, reporting and analysing research study data (Heale & Forbes, 2013; Olsen, 2004; Rugg, 2010).

The Theories Triangulation Approach:

The use of more than one theories or hypotheses when examining a particular phenomenon with the purpose of increasing reliability and validity of study results is called theory triangulation. Looking at a particular phenomenon from different angles through different lenses is the idea behind theory triangulation. The more divergent the theories or hypotheses are, the higher the likelihood that the theories or hypotheses will identify different issues (Heale & Forbes, 2013; Olsen, 2004; Rugg, 2010). The Triangulation Approach Selected for the Research Study: The research study examines the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community employing secondary data analysis design approach. Accordingly, this research study views data triangulation approach as appropriate to enhance the validity and reliability of the study results. In the data triangulation approach, the research study corroborates at least two different sources of secondary data (see Appendix A to Appendix F). The following discusses secondary data analysis techniques, and selects a data analysis technique appropriate for cross-sectional secondary data.

Data Analysis

The process by which research draws meaningful insights from raw data is called data analysis. Research uses these insights to make conclusions and propose the best course of direction. Therefore, data analysis is a critical process for successful research (Wooldridge, 2015).

The research study employs cross-sectional data analysis approach in the estimation of the economic impacts of international air transport service market liberalisation in the Southern African Development Community. Therefore, the research study regards cross-sectional linear regression analysis as an appropriate tool for estimating the coefficients of econometric models in the study (Wooldridge, 2015).

Cross-sectional Linear Regression Analysis: In statistical modeling, the most common form of data analysis is regression analysis. Regression analysis is a set of statistical processes for estimating the relationships between a dependent variable and one (simple regression) or more (multiple regression) independent variables. It can be utilised to assess the strength of the relationships between variables and to model the future relationships between them. Regression analysis determines which factors matter most, which factors to ignore, and how these factors interact with each other. However, the most popular form of regression analysis is linear regression, in which a researcher finds the line that most closely fits the data according to a specific mathematical criterion. For instance, the method of linear regression, also known as ordinary least squares (OLS) regression, computes the unique line that minimises the sum of squared differences between the true data and that line. Cross-sectional linear regression analyses cross-sectional data (Schelter et al., 2006; Wooldridge, 2015). In econometrics. crosssectional linear regression is a type of linear regression in which the dependent and independent variables are all associated with the same single period or point in time. This type of regression analysis is in contrast to a time-series linear regression or longitudinal regression in which the variables are considered to be associated with a sequence of points in time. Cross-sectional linear regression analysis uses cross-sectional data to estimate how one or more variables might impact the dependent variable in order to identify trends and patterns inherent between the variables across a particular space. This is especially useful for making estimations (Schelter et al., 2006; Wooldridge, 2015). The research study opts for the Statistical Package for Social Science (SPSS) to conduct cross-sectional multiple linear regression. Also referred to as ceteris paribus, the Statistical Package for Social Science involves looking at a wide range of factors that may influence a particular piece of data, eliminating the effects of all but one, and then identifying patterns (Arkkelin, 2014). Regression analysis is conducted for each of the multivariable econometric models (equations 11, 12, 13 and 14). In order to conduct regression

analysis for each of these econometric models, entry of a set of variables of each econometric model is created in the Variable View of the IBM SPSS Statistics Editor. Data entry of each set of the variables of each of the econometric models 11-14 is created in the Data View of the IBM SPSS Statistics Editor. However, product function analysis (multiplication) is conducted for Equation 15.

Chapter Summary

The purpose of the research study is to establish the significance of the economic impacts of international air transport service market liberalisation on the international air transport service. This chapter is designed to develop a structure that guides the statistical estimation of the economic impacts of international air transport service market liberalisation. The research study identifies relevant and appropriate research approach and design; defines population and sample; identifies appropriate research instruments; presents operational definitions of variables; makes ethical assurances and identifies appropriate study procedures; and identifies appropriate data collection and analysis approaches. The

research study discusses three main research approaches namely qualitative, quantitative, and mixed methods approaches, and selects the quantitative approach as a relevant and appropriate research approach. The research study estimates the magnitudes of the impacts of international air transport service market liberalisation (Creswell & Creswell, 2017; Nasser, 2001). Between the time series and the cross-sectional approaches, the research study views the cross-sectional approach as an appropriate quantitative framework for evaluating the impacts of liberalisation. The cross-sectional approach shows the significant role played by international air transport service market liberalisation and fundamental economic variables such as GDP, levels of trade, and geographical variables in determining traffic flows in a particular international air transport service market at a given period of time. The cross-sectional approach also provides an explicit and rigorous model that can universally be employed, and that can produce extrapolations for any arbitrary country-pair (Grančay, 2009; InterVISTAS, 2006, 2015; Ismaila, Warnock-Smith & Hubbard, 2014). The research study employs cross-sectional econometric models by InterVISTAS (2006, 2015), Myburgh et al. (2006), Abate (2013), and Abate and Christidis (2017, 2020)

respectively to statistically estimate the impacts of international air transport service market liberalisation on international passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor in the SADC. The econometric models involve independent variables other than the bilateral indicator variable to enhance the predictive power of the econometric models (InterVISTAS, 2006, 2015).

The research study discusses descriptive, experimental, quasi-experimental, and secondary data analysis designs within the quantitative approach, and identifies the secondary data analysis design as an appropriate design. The secondary data analysis design is a flexible and robust research design where the researcher does not have to dedicate vast amounts of energy, finances, time, and other resources for the data collection phase because someone else has already collected the data (Cohen et al., 2017; Creswell & Creswell, 2017; Ingham-Broomfield, 2014).

The research study defines the population and sample of countrypairs under investigation. The country-pairs provide the population under examination, and generate data on air traffic and other variables of the research study. The population is all countrypairs with signed bilateral air service agreements in the Southern African Development Community. There is a population of 49 country-pairs with signed bilateral air service agreements in the SADC (Appendix B). The sample of the country-pairs under examination is country-pairs with operational signed bilateral air service agreements in the Southern African Development Community. Employing the total population purposive sampling technique, the research study identifies the total population sample of 38 country-pairs with operational signed bilateral air service agreements from the population.

However, the research study defines and identifies restrictive and liberal international air

transport service markets from the sample of 38 country-pairs with operational signed bilateral air service agreements. This research study employs the cross-sectional approach for the evaluation of the economic impacts of international air transport service market liberalisation on the international air transport service. The cross-sectional approach relies on comparing the economic impacts of liberal international air transport markets to the economic impacts of restrictive international air transport markets (InterVISTAS, 2006, 2015). The research study interprets an international air transport service market as liberal or restrictive basing on five possible regulatory statuses of an international air transport service market. The research study interprets an international air transport service market as permissive if the designation of carrier operators on the international air transport service market is multiple; otherwise it is restrictive. An international air transport service market is flexible if the international air transport service market offers free determination of aircraft capacity; otherwise it is restrictive. An international air transport service market is tolerant if the international air transport service market does not interfere with the options of departure frequency, otherwise it is restrictive. An international air transport service market is considered permissive if the international air transport service market provides fifth freedom of the air (see Appendix C) to all points in the SADC; otherwise it is restrictive. An international air transport service market is flexible if there is free pricing; otherwise it is restrictive. However, basing on these possible regulatory statuses of an international air transport service market, the research study interprets an international air transport service market as liberal (designated 1) if the international air transport service market has attained two or more of these liberal statuses, otherwise the international air transport service market is overall considered restrictive (designated 0) between members of the country-pair. Employing the total population purposive sampling technique, the research study identifies a total population of 21 liberal international air transport

service markets, and a total population of 17 restrictive international air transport service markets in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community (see Appendix E7).

The research study also defines the population and the sample of secondary data sources for data collection. The secondary data sources are the reservoirs from which the data generated by the country-pairs are accessed. The population is all non-published and published electronic and printed secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community, while the sample of the secondary data sources for data collection is published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community. The research study discusses some research tools including the Internet, government and non-government archives, libraries, and institutions of learning, and selects the Internet and electronic libraries as appropriate tools with which to access secondary data from the sample of published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the SADC. The Internet and electronic libraries are viewed as conveniently available valid and reliable tools for accessing secondary data from the sample of published and nonpublished electronic secondary sources of data on the research variables in the SADC. The Internet and the electronic libraries make it easy and ready to access large pools of electronic secondary data. The research study presents operational definitions of variables employed in the study. Some variables operationally defined for the research study include

passenger volume (PassVol), airfare, passenger departure frequency (Frequency), revenue
passenger load factor (RPLFactor), direct impact of liberalisation on jobs (Δ Direct Jobs), and bilateral indicator. Adherence to ethical norms in research is of utmost importance. Generally, ethical norms promote sanity in research particularly in data collection and use. The current research study got approval from the UNICAF Research Ethics Committee (UREC) in April 2021. However, the secondary data involved in the research study are not related to human subjects. Thus, the data contain no identifying information of human subjects and, therefore, require no ethical review and approval (Johnston, 2017; Koziol & Arthur, 2011; Law, 2006; Tripathy, 2013). The research study involves secondary data that are for open access and are available in the public domain. Permission for further use of the secondary data is assumed where the data are freely accessible on the Internet, in books or other public forums. Despite this assumption, the primary originator of the data is acknowledged. The research study also involves purchased and licensed secondary data and, therefore, adheres to the terms of the license provided by the sources of the data. The research study discusses triangulation approaches including data triangulation, methods triangulation, investigators triangulation, and theories triangulation, and selects data/methods triangulation as an appropriate approach to enhance reliability and validity of the research results. The research study examines the economic impacts of international air transport service market liberalisation employing secondary data analysis design approach and, therefore, considers data triangulation approach as appropriate to enhance the validity and reliability of the study results (Heale & Forbes, 2013; Olsen, 2004; Rugg, 2010).

The research study views cross-sectional linear regression analysis as an appropriate tool for estimating the coefficients of the econometric models. The research study employs the cross-sectional approach for evaluating the impacts of liberalisation and, therefore, considers cross-sectional linear regression analysis as an appropriate. Linear regression analysis

can be employed to assess the strength of the relationship between variables. It determines which factors matter most, which factors to ignore, and how these factors interact with each other (Schelter et al., 2006; Wooldridge, 2015). The research study opts for the Statistical Package for Social Science (SPSS) to conduct cross-sectional linear regression. The Statistical Package for Social Science can handle multiple linear regression analysis. Also referred to as ceteris paribus, the Statistical Package for Social Science involves looking at a wide range of factors that may influence a particular piece of data, eliminating the effects of all but one, and then identifying patterns (Arkkelin, 2014).

CHAPTER 4: FINDINGS

The purpose of this quantitative research study is to establish the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. It seems international air transport service market liberalisation has had some economic impacts on the international air transport service in the SADC (Mhlanga, 2017; Myburgh et al., 2006; Pirie, 2006; Surovitskikh & Lubbe, 2015). However, the existing research has scarcely established whether the magnitudes and the statistics of the actual economic impacts of international air transport market liberalisation on the international air transport market liberalisation for the statistics of the actual economic impacts of international air transport market liberalisation on the international air transport service are significant in the SADC.

This chapter is designed to

reliably generate empirical knowledge that establishes the significance of the magnitudes and the

statistics of the economic impacts of international air transport service market liberalisation on the international air transport service. Accordingly, the chapter is organised into a system of sections namely Trustworthiness of Data, Reliability and Validity of Data, Data Collection and Analysis Results, and Evaluation of Findings. The chapter discusses the credibility of the secondary data employed in the research study in the Trustworthiness of Data section, and discusses the quality of the secondary data in the Reliability and Validity of Data section. The chapter presents data collection and multiple linear regression analysis results in the Results section, and evaluates the results in the Evaluation of Findings section.

Trustworthiness of Data

The current research achieves trustworthiness of secondary data through data/source triangulation. The use of two or more different data sources with the purpose of enhancing trustworthiness of data in order to reduce the risk of false interpretations in a research study is called data triangulation or source triangulation. In data triangulation, the trustworthiness of data is increased by corroborating data from more than one independent source. The strengths in the data from one source compensate for the weaknesses of data from the other source (Bell & Bryman, 2007; Boslaugh, 2007; Clarke & Cossette, 2000; Heale & Forbes, 2013; Ismaila, 2013; Martins et al., 2018; Olsen, 2004; Rugg, 2010; Saunders et al., 2003).

Some databases of electronic and printed secondary data sources for the research study include the International Civil Aviation Organization (ICAO, the SADC Airlines, the World Development Indicators, the SADC Development Indicators, the United Nations Tourism Organization (UNWTO), and the World Travel and Tourism Council (WTTC). The secondary data collected from these sources are defined by the variables of the econometric models of the study. The econometric models involve independent variables other than the bilateral indicator variable to enhance the predictive power of the econometric models (InterVISTAS, 2006, 2015). For ease of reference, the econometric models of the study are reintroduced below:

1. Multivariable Econometric Model 1 for Hypothesis 1

$$\ln(PassVol) = \beta_0 + \beta_1 \ln(GDP \ Product) + \beta_2 \ln(Distance) + \beta_2$$

$$\beta.(Bilateral Indicators) \tag{11}$$

2. Multivariable Econometric Model 2 for Hypothesis 2

Airfare per Kilometer =
$$\beta_0 + \beta_1 \ln (Distance) + \beta_2 \ln (Distance^2) + \beta_2 \ln (Distance^2)$$

$$\beta_3 \ln(PassVolFit) + \beta.(Bilateral Indicators)$$
 (12)

3. Multivariable Econometric Model 3 for Hypothesis 3

 $\ln(Frequency) = \beta_0 + \beta_1 \ln(Acsize) + \beta_2 \ln(Distance) + \beta_3 \ln(Operators) + \beta_2 \ln(Operators) + \beta_3 \ln(Operato$

$$\beta_4 \ln(PassVolFit) + \beta.(Bilateral Indicator)$$
 (13)

4. Multivariable Econometric Model 4 for Hypothesis 4

$$\ln(RPLFactor) = \beta_0 + \beta_1 \ln(PassVol) + \beta_2 \ln(Distance) + \beta_3 \ln(Distance^2) + \beta_2 \ln(Distance^2) + \beta_3 \ln(Di$$

$$\beta$$
.(Bilateral Indicator) (14)

5. Multivariable Econometric Model 5 for Hypothesis 5

 $\Delta Direct Jobs = Direct Jobs in the Travel and Tourism Industry x$

Tourist Spending as % of Consumption in the Travel and Tourism Industry x

Average Impact of Liberalization on Passenger Volumes (15)

The following outlines how trustworthiness of data is addressed on the variables of the research study.

Populations

The primary source of population data is the World Banks's World Development Indicators Data Bank. The World Development Indicators Data Bank provides a reliable and robust source of population information for research. One other source of data on population for SADC countries is the SADC Selected Economic and Social Indicators. The SADC Selected Economic and Social Indicators also provides reliable and complete source of data on SADC nations' population information (Myburgh et al., 2006) (see Appendix E1).

Trade

Data on trade values that represent the total of imports and exports for countries in the SADC are compiled from the World Bank's World Development Indicators Data Bank. The World Bank offers a complete source of trade values appropriate for research. Another source of data on trade values for SADC countries is the SADC Selected Economic and Social Indicators. The SADC Selected Economic and Social Indicators offers robust data on SADC countries' trade values (Myburgh et al., 2006) (see Appendix E2, Appendix E3 and Appendix E4).

International Air Passenger Volume

Owing to the scarcity of statistical data on international air passenger volumes on SADC country-pairs, the research study collects statistical data on international air passenger seats on international capital city-pairs as a proxy of international air passenger volumes on country-pairs. The traditional source of reliable data on international revenue passenger seats is the International Civil Aviation Organization (ICAO). The International Civil Aviation Organization develops a statistical database on air traffic data compiled by its Contracting States all over the world. Civil

aviation authorities and the SADC international passenger airlines in the Southern African Development Community (SADC) are another standard and reliable source of data on the volumes of international revenue passenger seats (Myburgh et al., 2006) (see Appendix E12).

Gross Domestic Products (GDPs)

The World Banks's World Development Indicators Data Bank, which is a web-based global database of world economic activities and development indicators, is the prominent source of data on GDP for each country of the world. The World Bank is reliable and accurate, and offers a robust source of information to numerous international researchers. Another source of SADC countries' GDP data is the SADC Selected Economic and Social Indicators. The SADC Selected Economic and Social Indicators database provides reliable GDP information on all SADC countries (InterVISTAS, 2015; Myburgh et al., 2006) (see Appendix E5).

Distances

Data on Great Circle Distance (direct distance) travelled by airlines in transporting passengers between city-pairs in the SADC are sourced from other renowned researchers such as Muvingi (2012). Researchers such as Muvingi (2012) provide a reliable source of data on direct distances between city-pairs. Direct distances between city-pairs sourced from renowned researchers such as Muvingi (2012) are corroborated with distances calculated using Google Maps. Google Maps reliably computes direct distances between city-pairs in the world (Ismaila, 2013) (see Appendix E6).

Bilateral Indicator Variable

Specific information on the liberal and restrictive indication of the statuses of international air transport service markets is compiled for various country-pairs by the International Civil Aviation Organization (ICAO). Civil aviation authorities (CAAs) in the SADC are another source

of data on liberal and restrictive statuses of international air transport service markets between countries in the SADC (InterVISTAS, 2006, 2015; Myburgh et al., 2006). In this particular research, the indicator (dummy) variables of the international air transport service markets are coded in such a way that a '0' indicates a restrictive international air transport service market and a '1' indicates a liberal international air transport service market (see Appendix E7).

International Passenger Airfares

The SADC civil aviation authorities are regarded as the reliable and formidable source of statistical data on international passenger airfares. Civil aviation authorities in the SADC compile statistical data on international passenger airfares from airline operators in the SADC region. Another reliable source of statistical data on international passenger airfares is SADC Airlines. SADC Airlines develop comprehensive, accurate and reliable statistical data on airfares (Myburgh et al., 2006) (see Appendix E8).

International Air Operators

Civil aviation authorities in the Southern African Development Community are the traditional source of information on airlines that serve SADC state-pairs. Airline operators are another source of information on airlines that serve country-pairs in the SADC (Myburgh et al., 2006) (see Appendix E9).

International Departure Frequencies

Owing to the scarcity of statistical data on international departure frequencies between SADC country-pairs, the research study collects data on international passenger flights between SADC capital city-pairs as a proxy of international departure frequencies between SADC countrypairs. Reliable data on international passenger flights performed by scheduled and advertised aircraft movements is provided by the International Civil Aviation Organization (ICAO). The International Civil Aviation Organization builds reliable statistical database on international passenger flights compiled by airlines and airports in its Contracting States globally. Another standard source of accurate and reliable data on scheduled and advertised international passenger flights is the SADC airlines (Ismaila, 2013; Myburgh et al., 2006; Schlumberger, 2009) (see Appendix E10 and Appendix E11).

Aircraft Sizes

Aircraft size is the average number of seats per flight. Reliable data on average number of seats per flight between a country-pair in the SADC are sourced from the International Civil Aviation Organization. Data on aircraft sizes are also compiled from statistical publications of airlines and civil aviation authorities in the SADC. Statistical publications of airlines and civil aviation authorities data on aircraft sizes (Abate, 2013; Myburgh et al., 2006) (see Appendix E12 and Appendix E13).

International Revenue Passenger Load Factors

Due to the scarcity of statistical data on international revenue passenger load factors of SADC national airlines operating between SADC country-pairs, the research study calculates international revenue passenger load factors employing statistical data on international passenger flights, Great Circle Distances, international revenue air passenger volumes, and international air passenger seats. International revenue air passenger volumes are estimated from international air passenger seats by determining 70% of the international air passenger seats (Schlumberger, 2009).

Direct Jobs in the T&T Industry

Data on direct jobs for all SADC member states are acquired from the World Travel and

Tourism Council. The World Travel and Tourism Council (WTTC) provides a reliable database on employment for SADC member states. Census and Economic Information Center (CEIC) is another reliable database on employment for SADC member states. The World Travel and Tourism Council and the Census and Economic Information Center undertake research on the economic impact of travel and tourism in the world, and are regarded as the world's standardised measurement of the economic impact of the travel and tourism sector (Myburgh et al., 2006) (see Appendix E18).

Spending of International Air Tourists

The World Travel and Tourism Council (WTTC) provides reliable data on air tourist spending in the SADC. Census and Economic Information Center (CEIC) is another renowned source of data on air tourist spending in the SADC. Both WTTC and CEIC undertake research on the economic impact of travel and tourism in the world including the SADC (Myburgh et al., 2006) (see Appendix E21).

Consumption in T&T Industry

The World Travel and Tourism Council (WTTC) provides reliable data on consumption in the T&T industry in the SADC. The Census and Economic Information Center (CEIC) is another renowned source of data on consumption in the T&T industry in the SADC. Both WTTC and CEIC undertake research on the economic impact of travel and tourism in the world including SADC. The United Nations World Travel Organization (UNWTO) also provides data on consumption in the T&T industry in the SADC (Myburgh et al., 2006) (see Appendix E22). Other than the trustworthiness of data, the reliability and validity of secondary data also determine the quality of research results (Olabode et al., 2019).

Reliability and Validity of Data

Secondary data has its own shortcomings as identified earlier. The secondary data may be outdated, inaccurate or have validity issues. It may not be detailed enough and/or relevant to the population under examination. For example, administrative data, transactional data or data from the Internet, which are not originally collected for a given research, may not be available in the usual 'research format, or may be difficult to access. This exposes research studies to possible errors that can affect the quality of the data, and invariably affects the viability of the research. This section, therefore, believes that enhancing the reliability and validity of secondary data for good quality is critical in social science research (Olabode et al., 2019; Rugg, 2010).

Enhancing Reliability and Validity in the Research Study

This research study employs data/source triangulation to enhance the reliability and validity of secondary data. Through triangulation theory, the research study convinces itself of the essential truth and accuracy on an issue by corroborating two or more sources of secondary data sources on the issue. To trust the initial secondary data source, the research study finds another independent secondary source. As an additional secondary data source corroborates the first source, this increases the confidence the researcher has in the initial secondary source. The more the secondary data from other independent sources corroborate the initial source, the more the research study trusts the truthfulness and accuracy of the claim. Thus, the research study establishes validity and reliability of data on an issue when as many as possible secondary data sources provide data that corroborate on the given claim. Essential qualities of secondary data sources research studies are interested in include the following (Olabode et al., 2019; Rugg, 2010):

Suitability of Secondary Source: The research study reads the introduction, goes through the table of contents and the index to determine if the source has sufficient and relevant information. The research study also ensures that the information in the source should meet the required academic standard.

Objectivity of Secondary Source: As prejudices and biased opinions will never be excluded from secondary data sources, the researcher is on guard to detect these biases in the introductions or prefaces where writers usually give ideas of their points of view. In view of this, the research study uses other secondary data sources to get a balanced view.

Accuracy of Secondary Source: The research study employs two methods to determine if a secondary source is accurate. In one method, the research study uses other secondary sources to corroborate the information given by the initial source, and in the other method, the research study checks the list of references used by the initial secondary source. The reference list tells the research study the type of sources used by the initial secondary source, and how the sources in the reference list can be verified. So, the research study does not use a secondary source that does not have references.

Currency of Secondary Source: Although the research study is of the belief that in history the older the work, the more valuable the information it contains, the research study still holds the view that it is important that secondary sources in a particular field contain information that reflects the most recent discoveries in the field. Therefore, the research study pays attention to the date of secondary source publication and, thus, uses newer editions.

Authority of Secondary Source: The research study pays attention to authors that are experts and well known in the field. The research study goes for reputable publishers whose published works are of high academic quality. The next section discusses the findings of the research study.

Results

This research study estimates the actual economic impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service namely air passenger volume, passenger airfare, passenger departure frequency, and revenue passenger load factor of national airlines in the Southern African Development Community. It further estimates the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry in the SADC.

The research study applies the quantitative approach to guide the statistical estimation of the economic impacts of international air transport service market liberalisation. The study applies the cross-sectional approach to evaluate the economic impacts of international air transport service market liberalisation, and employs cross-sectional econometric models by InterVISTAS (2006, 2015), Myburgh et al. (2006), Abate (2013), and Abate and Christidis (2017, 2020) respectively to estimate the economic impacts of international air transport service market liberalisation. The research study employs the secondary data analysis design within the quantitative approach for the estimation of the actual economic impacts of international air transport service market liberalisation. The population under

examination in this research study comprises country-pairs. The country-pairs generate crosssectional data on international passenger air traffic and other relevant variables. The population is all country-pairs with signed bilateral air service agreements in the Southern African Development Community. There is a population of 49 country-pairs with signed bilateral air service agreements in the SADC (see Appendix B). However, the sample of the country-pairs under investigation is country-pairs with operational signed bilateral air service agreements in the SADC. The research study uses the total population sample of 38 country-pairs with operational signed bilateral air service agreements, and identifies 21 liberal international air transport service markets, and 17 restrictive international air transport service markets in the country-pairs with operational signed bilateral air service agreements in the Southern African Development Community (see Appendix

E7). The research study also employs the population and sample of secondary data sources. The secondary data sources are reservoirs from which cross-sectional data generated by the country-pairs may be accessed. The population is all non-published and published electronic and printed secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community, while the sample of the secondary data sources for data collection is published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community, while the sample of the secondary data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community. Published and non-published electronic secondary data sources for open access such as e-books, e-journals, e-magazines/newspapers, and e-documents are available for free access in the public domain.

The research study employs the Internet and electronic libraries to access published and non-published electronic secondary data sources such as e-books, e-journals, e-magazines/newspapers and e-documents. Civil aviation authorities in the SADC establish private electronic libraries that provide access to non-published and published electronic data sources. The research study corroborates two or more sources of secondary data to enhance the trustworthiness, reliability and validity of the results. The research study views secondary data over the period 2011-2015 appropriately updated for the investigation into the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. At the approval of the research study by the Unicaf Research Ethics Committee (UREC) in April 2021,

the research study tried to survey cross-sectional secondary data on international air passenger volumes, international passenger airfares, international passenger departure frequencies, international revenue passenger load factors, and other variables over the period 2000-2021 in the SADC. The period that provides satisfactorily enough updated cross-sectional secondary statistical data on these variables and/or their proxies is the period over 2011-2015.

The research study applies multiple linear regression analysis for the estimation of the significance of the magnitudes and the statistics of the economic impacts of international air transport service market liberalisation on the international air transport service in the SADC, and employs the statistical package for social science (SPSS) to perform multiple linear regression analysis. Multiple linear regression fits a multivariable econometric model into a multivariable econometric dataset to estimate a multivariable regression model.

Data collection and analysis results are presented for respective questions/hypotheses of the research study. For ease of reference, the research hypotheses are reintroduced below:

- H10. The actual economic impact of international air transport service market liberalisation on international air passenger volume is not significant in the Southern African Development Community.
- H1a. The actual economic impact of international air transport service market liberalisation on international air passenger volume is significant in the Southern African Development Community.
- H20. The actual economic impact of international air transport service market liberalisation on international passenger airfare is not significant in the Southern African Development Community.

- H2a. The actual economic impact of international air transport service market liberalisation on international passenger airfare is significant in the Southern African Development Community.
- H30. The actual economic impact of international air transport service market liberalisation on international passenger departure frequency is not significant in the Southern African Development Community.
- H3a. The actual economic impact of international air transport service market liberalisation on international passenger departure frequency is significant in the Southern African Development Community.
- H40. The actual economic impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is not significant in the Southern African Development Community.
- H4a. The actual economic impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is significant in the Southern African Development Community.
- H50. The actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism (T&T) industry is not significant in the Southern African Development Community.
- H5a. The actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism (T&T) industry is significant in the Southern African Development Community.

Summary of Data Collection Results

The data collection exercise produces Multivariable Dataset 1 for Hypothesis 1 (see summary in Appendix F1), Multivariable Dataset 2 for Hypothesis 2 (see summary in Appendix F2), Multivariable Dataset 3 for Hypothesis 3 (see summary in Appendix F3), and Multivariable Dataset 4 for Hypothesis 4 (see summary in Appendix F4).

Multiple Linear Regression Results

Research Question 1/Hypothesis 1: The research study identifies the following multivariate econometric model for international air passenger volume:

1. Multivariable Econometric Model 1 for Hypothesis 1

$$\ln(PassVol) = \beta_0 + \beta_1 \ln(GDP \ Product) + \beta_2 \ln(Distance) + \beta_2$$

Multiple linear regression analysis produces regression plots, regression tables and regression models for Hypothesis 1.

Regression Plots for Research Question 1/Hypothesis 1: These regression plots include probability plots (p-p plots), histograms and regression scatter plots.



Normal P-P Plot of Regression Standardized Residual





Histogram









Partial Regression Plot



Partial Regression Plot

Natural Log of Great Circle Distance



Regression Tables for Research Question 1/Hypothesis 1: These regression statistical tables include residual statistics, regression coefficient statistics, regression correlation statistics, and regression model summary for Hypothesis 1.

	Minimum	Maximum	Mean	Std. Deviatio	n N	
Std.	-1.946	1.679	.000	.959	38	
Residual						

Table 1. Residual Statistics for Hypothesis 1

Note: Dependent Variable: Natural Log of Passenger Volume

	В	Sig.	VIF
Constant	-5.389	.303	
ln(GDP Product)	.394	.000	1.001
ln(Distance)	473	.059	1.000
Bilateral Indicator	.620	.102	1.001

Table 2. Unstandardised Coefficients (B), Significance (Sig.) and VIF Statistics for Hypothesis 1

Note: Dependent Variable: Natural Log of Passenger Volume

	Regression Coefficient
GDP	.394***
	(.100)
Distance	473*
	(.242)
Bilateral Indicator	$.620^{*}$
	(.369)
Constant	-5.389
	(5.153)
Observations	38

Table 3. Summary of Statistical Significance of Regression Coefficients for Hypothesis 1

R-Square

Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%

.400

Table 4. Pearson Correlations for Hypothesis 1

	ln(PassVol)	In(GDP Product)	In(Distance)	Bilateral Indicator
ln(PassVol)	1.000	.531	266	.236
ln(GDP Product)	.531	1.000	.010	.021
ln(Distance)	266	.010	1.000	007
Bilateral Indicator	.236	.021	007	1.000

Table 5. Model Summary for Hypothesis 1

R	R Square	Adjusted R Square	F Change	Sig. F Change	Durbin-Watson
.632	.400	.347	7.556	.000	1.729

Note: Dependent Variable: Natural Log of Passenger Demand

Regression Model for Research Question 1/Hypothesis 1: These are mathematical and

graphical representations of multivariable regression model for Hypothesis 1.

Mathematical Representation of Multivariable Regression Model 1 for Hypothesis 1:

This is basically a mathematical multivariable regression model for Hypothesis 1.

$$\ln(PassVol) = -5.389 + 0.394\ln(GDP \ Product) - 0.473\ln(Distance) + 0.4$$

Graphical Representation of Multivariable Regression Model 1 for Hypothesis 1: The graphical representation is of the regression model is basically a graph displaying two straight lines separated by a distance. One line represents a regression model of liberal bilateral air service agreement, while the other line represents a regression model of a restrictive bilateral air service agreement. The distance separating the two lines represents the coefficient of the bilateral indicator in the regression model. The gradient of the two lines represents the aggregated coefficient of other quantitative variables in the regression model. Below is a graphical representation of multivariable regression model for Hypothesis 1.





Note. Graph showing the average difference between the level of international air passenger volume in liberalised international air transport markets and the level of international air passenger volume in restrictive international air transport markets (Not drawn to scale).

Research Question 2/Hypothesis 2: The research study identifies the following multivariate econometric model for international passenger airfare:

2. Multivariable Econometric Model 2 for Hypothesis 2

Airfare per Kilometer =
$$\beta_0 + \beta_1 \ln(Distance) + \beta_2 \ln(Distance^2) + \beta_2 \ln(Distance^2)$$

 $\beta_{3}\ln(PassVolFit) + \beta_{.}(Bilateral Indicator) + \beta_{K}\ln(Var_{K})$ (12)

Multiple linear regression analysis produces regression plots, regression statistical tables and regression models for Hypothesis 2.

Regression Plots for Research Question 2/Hypothesis 2: These regression plots include probability plots (p-p plots), histograms and regression scatter plots.

Figure 8. Normal Probability Plot for Hypothesis 2

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Airfare per Kilometer







Histogram









Partial Regression Plot



Partial Regression Plot



Regression Tables for Research Question 2/Hypothesis 2: These regression statistical tables include residual statistics, regression coefficient statistics, regression correlation statistics, and regression model summary for Hypothesis 2.

Table 6. Residual Statistics for Hypothesis	s 2
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	Minimum	Maximum	Mean	Std. Deviation	N
Std. Residual	-1.798	1.744	.000	.959	38

Note: Dependent Variable: Airfare per Kilometer

	В	Sig.	VIF
Constant	1.246	.007	
ln(Distance)	093	.004	1.255
ln(PassVolFit)	.013	.661	1.458
Bilateral Indicator	102	.032	1.200

Table 7. Unstandardised Coefficients (B), Significance (Sig.) and VIF Statistics for Hypothesis 2

Note: Dependent Variable: Airfare per Kilometer

-	
	Regression Coefficient
Distance	093***
	(.030)
PassVolFit	.013
	(.028)
Bilateral Indicator	102**
	(.045)
Constant	1.246***
	(.438)
Observations	38

Table 8. Summary of Statistical Significance of Regression Coefficients for Hypothesis 2

R-Square .339

Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 9. Pearson Correlations for Hypothesis 2

	Airfare per Km	ln(Distance)	ln(PassVolFit)	Bilateral Indicator
Airfare per Km	1.000	445	001	367
ln(Distance)	445	1.000	421	007
ln(PassVolFit)	001	421	1.000	.373
Bilateral Indicator	367	007	.373	1.000

Table 10. Model Summary for Hypothesis 2

R	R Square	Adjusted R Square	F Change	Sig. F Change	Durbin-Watson
.582	.339	.281	5.810	.003	1.894

Note: Dependent Variable: Airfare per Kilometer

Regression Model for Research Question 2/Hypothesis 2: These are mathematical and

graphical representations of multivariable regression model for Hypothesis 2.

Mathematical Representation of Multivariable Regression Model 2 for Hypothesis 2:

This is basically a mathematical multivariable regression model for Hypothesis 2.

$$Airfare \ per \ Kilometer = 1.246 - 0.093 ln(Distance) + 0.013 ln(PassVolFit) - 0.013 ln($$

The variable (Distance²) was dropped from the multivariable regression model because of its strong correlation with the variable "Distance".

Graphical Representation of Multivariable Regression Model 2 for Hypothesis 2: This

is essentially a graphical multivariable regression model for Hypothesis 2.

Figure 12. Graphical Representation of Multivariable Regression Model 2 for Hypothesis 2



Note. Graph showing the average difference between the level of international passenger airfare in liberalised international air transport markets and the level of international passenger airfare in restrictive international air transport markets (Not drawn to scale).

Research Question 3/Hypothesis 3: The research study identifies the following multivariate econometric model for international passenger departure frequency:

3. Multivariable Econometric Model 3 for Hypothesis 3

$$\ln(Frequency) = \beta_0 + \beta_1 \ln(Acsize) + \beta_2 \ln(Distance) + \beta_3 \ln(Operators) + \beta_2 \ln(Operators) + \beta_3 \ln(Operato$$

$$\beta_4 \ln(PassVolFit) + \beta.(Bilateral Indicator)$$
 (13)

Multiple linear regression analysis produces regression plots, regression statistical tables and regression models for Hypothesis 3.

Regression Plots for Research Question 3/Hypothesis 3: These regression plots include probability plots (p-p plots), histograms and regression scatter plots.

Figure 13. Normal Probability Plot for Hypothesis 3



Normal P-P Plot of Regression Standardized Residual





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Partial Regression Plot



Partial Regression Plot



Partial Regression Plot



Partial Regression Plot



Regression Tables for Research Question 3/Hypothesis 3: These regression statistical tables are residual statistics, regression coefficient statistics, regression correlation statistics, and regression model summary for Hypothesis 3.

 Table 11. Residual Statistics for Hypothesis 3

	Minimum	Maximum	Mean	Std. Deviation	Ν	
Std. Residual	-1.619	1.953	.000	.930	38	

Note: Dependent Variable: Natural Log of Departure Frequency

	В	Sig.	VIF
Constant	3.492	.198	
ln(PassVolFit)	.376	.048	1.654
ln(Acsize)	.224	.289	2.194
ln(Distance)	501	.024	1.669
ln(Operators)	.380	.348	2.461
Bilateral Indicator	.512	.071	1.209

Table 12. Unstandardised Coefficients (B), Significance (Sig.) and VIF Statistics for Hypothesis 3

Note: Dependent Variable: Natural Log of Departure Frequency

	Regression Coefficient
Distance	501**
	(.212)
PassVolFit	.376**
	(.183)
Aircraft Size	.224
	(.207)
Operators	.380

Table 13. Summary of Statistical	Significance of Regre	ession Coefficients for	Hypothesis 3
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	(.399)
Bilateral Indicator	.512*
	(.275)
Constant	3.492
	(2.656)
Observations	38
R-Square	.601

Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%

	ln(Freq.)	ln(PassVolFit)	ln(Acsize)	In(Distance)	ln(Operators)	Bilateral
						Indicator
ln(Freq.)	1.000	.641	.329	492	.563	.394
ln(PassVolFit)	.641	1.000	.232	421	.452	.373
ln(Acsize)	.329	.232	1.000	.151	.636	.118
ln(Distance)	492	421	.151	1.000	310	007
ln(Operators)	.563	.452	.636	310	1.000	.188

Table 14. Pearson Correlations for Hypothesis 3

Bilateral	.394	.373	.118	007	.188	1.000
Indicator						

239

Table 15. Model Summary for Hypothesis 3

R	R Square	Adjusted R Square	F Change	Sig. F Change	Durbin-Watson
.775	.601	.538	9.624	.000	1.681

Note: Dependent Variable: Natural Log of Departure Frequency

Regression Model for Research Question 3/Hypothesis 3: These are mathematical and

graphical representations of multivariable regression model for Hypothesis 3.

Mathematical Representation of Multivariable Regression Model 3 for Hypothesis 3:

This is a mathematical multivariable regression model for Hypothesis 3.

 $\ln(Frequency) = 3.492 + 0.376\ln(PassVolFit) - 0.224\ln(Acsize) - 0.501\ln(Distance) + 0.380\ln(Operators) + 0.512(Bilateral Indicator)$ (18)

Graphical Representation of Multivariable Regression Model 3 for Hypothesis 3: This

is a graphical multivariable regression model for Hypothesis 3.





Note. Graph showing the average difference between the level of international passenger departure frequency in liberalised international air transport markets and level of international passenger departure frequency in restrictive international air transport markets (Not drawn to scale).

Research Question 4/Hypothesis 4: The research study identifies the following multivariate econometric model for international revenue passenger load factor:

4. Multivariable Econometric Model 4 for Hypothesis 4

 $\ln(RPLFactor) = \beta_0 + \beta_1 \ln(PassVol) + \beta_2 \ln(Distance) + \beta_3 \ln(Distance^2) + \beta_2 \ln(Distance^2) + \beta_3 \ln(Di$

 β .(Bilateral Indicator) (14)

Multiple linear regression analysis produces regression plots, regression statistical tables and regression models for Hypothesis 4.

Regression Plots for Research Question 4/Hypothesis 4: These regression plots include probability plots (p-p plots), histograms and regression scatter plots.



Normal P-P Plot of Regression Standardized Residual







Figure 20. Scatter Plot for Hypothesis 4





Partial Regression Plot





Regression Tables for Research Question 4/Hypothesis 4: These regression statistical tables include residual statistics, regression coefficient statistics, regression correlation statistics, and regression model summary for Hypothesis 4.

Table 16. Residual Statistics for Hypothesis 4

	Minimum	Maximum	Mean	Std. Deviation	Ν	
Std. Residual	-1.785	1.805	.000	.959	38	

Note: Dependent Variable: Natural Log of Load Factor

	В	Sig.	VIF
Constant	4.396	.007	
ln(PassVol)	.611	.000	1.145
ln(Distance)	.254	.121	1.057
Bilateral Indicator	.532	.039	1.087

Table 17. Unstandardised Coefficients (B), Significance (Sig.) and VIF Statistics for Hypothesis 4

Note: Dependent Variable: Natural Log of Load Factor

Table 18. Summary	v of Statistical	Significance	of Regression	Coefficients for	[•] Hypothesis 4

	Regression Coefficient
Passenger Vol.	.611***
	(076)
	254***
Distance	.254
	(.160)
Bilateral Indicator	.532**
	(.247)
Constant	4.396***
	(1.523)
Observations	38

R-Square .718

Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%

	ln(LFactor)	ln(PassVol)	ln(Distance)	Bilateral Indicator
ln(LFactor)	1.000	.809	029	.421
ln(PassVol)	.809	1.000	225	.277
ln(Distance)	029	225	1.000	007
Bilateral	.421	.277	007	1.000
Indicator				

Table 19. Pearson Correlations for Hypothesis 4

Table 20. Model Summary for Hypothesis 4

R	R Square	Adjusted R Square	F Change	Sig. F Change	Durbin-Watson
.847	.718	.693	28.841	.000	1.608

Note: Dependent Variable: Natural Log of Load Factor

Regression Model for Research Question 4/Hypothesis 4: These are mathematical and

graphical representations of multivariable regression model for Hypothesis 4.

Mathematical Representation of Multivariable Regression Model 4 for Hypothesis 4:

This is a mathematical multivariable regression model for Hypothesis 4.

$$\ln(RPLFactor) = 4.396 + 0.611\ln(PassVol) + 0.254\ln(Distance) + 0.532(Bilateral Indicator)$$
(19)

The variable (Distance²) was dropped from the multivariable regression model because of its strong correlation with the variable "Distance".

Graphical Representation of Multivariable Regression Model 4 for Hypothesis 4: This is a graphical multivariable regression model for Hypothesis 4.

Figure 22. Graphical Representation of Multivariable Regression Model 4 for Hypothesis 4



Note. Graph showing the average difference between the level of international revenue passenger load factor in liberalised international air transport markets and the level of international revenue passenger load factor in restrictive international air transport markets (Not drawn to scale).

Research Question 5/Hypothesis 5: The research study identifies the following multivariate econometric model for direct jobs in the travel and tourism industry:

5. Multivariable Product Model 5 for Hypothesis 5

Direct Impact on Jobs = Direct Jobs in the Travel and Tourism Industry x

Tourist Spending as % of Consumption in the Travel and Tourism Industry x

Average Impact of Liberalization on Passenger Volume (15)

Multivariable Product Model 5 for Research Question 5/Hypothesis 5: The Multivariable Product Model 5 (15 above) for Hypothesis 5 becomes:

6. Multivariable Product Model 5 for Hypothesis 5

Direct Impact on Jobs = Direct Jobs in the Travel and Tourism Industry x

Tourist Spending as % of Consumption in the

Travel and Tourism Industry x 62% (20)

Evaluation of Findings

The purpose of this research study is to establish the significance of the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The research study addresses the research purpose and questions/hypotheses through evaluating the significance of the magnitudes and the statistics of the economic impacts of international air transport service market liberalisation on the international air transport service. However, critical to the magnitude and the statistics of the impact of international air transport service market liberalisation on the international air transport service is the validity of the secondary data employed in the research study. The analytical framework in the estimation of the magnitude and the statistics of the impact of international air transport service market liberalisation. Multiple linear regression fits a multivariable econometric model into a multivariable dataset to estimate the magnitude and the statistics of the impact of international air transport service market liberalisation. The magnitude and the statistics of the impact of international air transport service market liberalisation are the elements of the confirmation of a particular hypothesis. Therefore, the research study validates multivariable datasets for multiple linear regression for reliable estimation of the magnitudes and the statistics of the impact of international air transport service market liberalisation (Field, 2009; Siegfried, 2015).

Validation of Multivariable Datasets

Criteria for the Validation of Multivariable Datasets: In principle, multiple linear regression fits a multivariable econometric model into a multivariable dataset to estimate the impacts of independent variables of a particular multivariable regression model. Critical to reliable estimation of the impacts of the independent variables of the particular multivariable regression model is the validity of the multivariable dataset. A valid multivariable dataset meets certain assumptions of multiple linear regression. Multiple linear regression assumes that the multivariable dataset exhibits normality, linearity, homoscedasticity, non-multicollinearity and non-autocorrelation for reliable estimation of the impacts of independent variables of a particular multivariable regression model. As such, normality, linearity, homoscedasticity, non-multicollinearity, and non-correlation define the criteria for the validation of a multivariable dataset for multiple linear regression (Field, 2009; Osborne & Waters, 2002; Siegfried, 2015).

Normality: Multiple linear regression assumes normal distribution of disturbances. Multiple linear regression assumes that the disturbances of the variables in a multivariable regression model are normally distributed. Probability plots give researchers information about the normality of variable distribution, while histograms identify the presence of outliers. Casewise diagnostics also detect outliers by examining number of standardised residuals that exceed the cutoff value (COV) of |2| (Field, 2009; Osborne & Waters, 2002; Siegfried, 2015). Linearity: Multiple linear regression assumes a linear relationship between independent and dependent variables. Multiple linear regression assumes that the distribution of residuals is linear between independent and dependent variables in a multivariable regression model. Linearity assumption can be verified by visually examining a scatter plot of regression standardised residuals against regression standardised predicted values, or by visually examining the distribution of cases in a partial regression plot. A scatter plot or a partial regression plot that depicts a certain pattern implies linearity concern (Field, 2009; Osborne & Waters, 2002; Siegfried, 2015).

Homoscedasticity: Multiple linear regression assumes homoscedastic residuals across all levels of the independent variables in a multivariable regression model. Multiple linear regression assumes that the variance of residuals is constant across all levels of the independent variables in a multivariable regression model. Homoscedasticity assumption can be verified by visually examining a scatter plot of regression standardised residuals against regression standardised predicted value, or by visually examining the distribution of cases in a partial regression plot. A scatter plot or a partial regression plot that depicts a certain pattern suggests homoscedasticity concern (Field, 2009; Osborne & Waters, 2002; Siegfried, 2015). Non-multicollinearity (Independence): Multiple linear regression assumes non-multicollinear correlation between independent variables. Multiple linear regression assumes that independent variables in a multivariable regression model possess orthogonal correlation. Multicollinearity can be detected by reviewing variance inflation factor (VIF), or by examining correlation structure of independent variables in a model. The VIF measures how much inflated the variance of the estimated regression coefficient is as compared to a situation where the variables are not linearly related. SPSS suggests the following guidelines (Field, 2009; Osborne & Waters, 2002; Siegfried, 2015):

VIF = 1: non-multicollinearity

 $1 \le VIF \le 5$: moderate multicollinearity

 $5 \le VIF \le 10$: high multicollinearity

Rule of thumb suggests that VIF higher than 5 or correlation higher than 0.85 should be investigated (Field, 2009; Osborne & Waters, 2002; Siegfried, 2015).

Non-autocorrelation: Multiple linear regression assumes non-autocorrelation in its variables. Multiple linear regression assumes that variables in a multivariable regression model are not autocorrelated. The Durbin-Watson-test is a preferable means for detecting autocorrelation. Durbin-Watson statistic value close to 2 indicates non-autocorrelation; a value below 2 represents positive autocorrelation, and a value above 2 represents negative autocorrelation. Acceptable autocorrelation values range from 1.5 to 2.5 (Field, 2009; Osborne & Waters, 2002; Siegfried, 2015; White, 1992). The research study compiles

multivariable datasets for multiple linear regression in the study. Below is the validation of these multivariable datasets. **Validation of Multivariable Dataset 1 for Hypothesis 1:** Figures 3, 4, 5 and 6; and tables 1, 2, 4, and 5 present results appropriate for the validation or the disapproval of secondary data for Hypothesis 1 (Appendix F1a and Appendix F1b). **Normality:** Figure 3, Figure 4 and Table 1 present results appropriate for the validation of the normality of secondary data for Hypothesis 1. Figure 3 and Figure 4 respectively present normal probability plot and histogram of secondary data for

Hypothesis 1. Table 1 presents residual statistics of the econometric model for Hypothesis 1. The

normal probability plot and the histogram of the econometric model for Hypothesis 1 depict close approximation of normal distribution of standardised residuals. Casewise diagnostics depict no standardised residuals that exceed the cut-off value of |2|. Therefore, Multivariable Dataset 1 for Hypothesis 1 satisfies the assumption of normality.

Linearity: Figure 5 and Figure 6 present results suitable for the validation of the linearity of secondary data for Hypothesis 1. Figure 5 and Figure 6 respectively present scatter plot and partial regression plots of secondary data for Hypothesis 1. The scatter plot and the partial regression plots of the econometric model for Hypothesis 1 depict the presence of linearity. The plots depict random arrays that suggest linear distribution of residuals. Therefore, Multivariable Dataset 1 for Hypothesis 1 satisfies the assumption of linearity.

Homoscedasticity: Figure 5 and Figure 6 provide results appropriate for the validation of the homoscedasticity of secondary data for Hypothesis 1. Figure 5 and Figure 6 respectively present scatter plot and partial regression plots of secondary data for Hypothesis 1. The scatter plot and the partial regression plots of the econometric model for Hypothesis 1 depict the presence of homoscedasticity. The plots depict random arrays that suggest constant variance of residuals. Therefore, Multivariable Dataset 1 for Hypothesis 1 satisfies the assumption of homoscedasticity.

Non-

multicollinearity: Table 2 and Table 4 present results suitable for the validation of the nonmulticollinearity of secondary data for Hypothesis 1. Table 2 and Table 4 respectively present VIF statistics and Pearson Correlations statistics of secondary data for Hypothesis 1. The econometric model for Hypothesis 1 depicts VIF statistics of less than 5, and respective Pearson Correlations statistic values of less than 0.85. Therefore, Multivariable Dataset 1 for Hypothesis 1 satisfies the assumption of non-multicollinearity. **Non-** autocorrelation: Table 5 presents results appropriate for the validation of the non-autocorrelation of secondary data for Hypothesis 1. Table 5 presents a Durbin-Watson statistic value of secondary data for Hypothesis 1. The Durbin-Watson statistic value of the econometric model for Hypothesis 1 is within the recommended range of 1.5 to 2.5. Therefore, Multivariable Dataset 1 for Hypothesis 1 satisfies the assumption of non-autocorrelation. The screening of Multivariable Dataset 1 for Hypothesis 1 substantiates that the dataset satisfies all the assumptions of multiple linear regression. Therefore, Multivariable Dataset 1 for Hypothesis 1 is valid for

multiple linear regression in the estimation of Multivariable Regression Model 1.

Validation of Multivariable Dataset

2 for Hypothesis 2: Figures 8, 9, 10 and 11; and tables 6, 7, 9 and 10 present results suitable for the validation or the rejection of secondary data for Hypothesis 2 (Appendix F2a and Appendix F2b). Normality: Figure 8, Figure 9 and Table 6 present results appropriate for the validation of the normality of secondary data for Hypothesis 2. Figure 8 and Figure 9 present a normal probability plot and a histogram of secondary data for Hypothesis 2. The normal probability plot and the histogram of the econometric model for Hypothesis 2 depict close approximation of normal distribution of standardised residuals. Casewise diagnostics depict no standardised residuals that exceed the cut-off value of |2|. Therefore, Multivariable Dataset 2 for Hypothesis 2 satisfies the assumption of normality.

Linearity: Figure 10 and Figure 11 present results suitable for the validation of the linearity of secondary data for Hypothesis 2. Figure 10 and Figure 11 present scatter plot and partial regression plots of secondary data for Hypothesis 2 respectively. The scatter plot and the partial regression plots of econometric model for Hypothesis 2 depict the presence of linearity. The scatter plot and the partial regression plots depict random arrays that suggest linear distribution

of residuals. Therefore, Multivariable Dataset 2 for Hypothesis 2 satisfies the assumption of linearity.

Homoscedasticity: Figure 10 and Figure 11 present results appropriate for the validation of the homoscedasticity of secondary data for Hypothesis 2. Figure 10 and Figure 11 present a scatter plot and partial regression plots of secondary data for Hypothesis 2 respectively. The scatter plot and the partial regression plots of econometric model for Hypothesis 2 depict the presence of homoscedasticity. The plots depict random arrays that suggest constant variance of residuals. Therefore, Multivariable Dataset 2 for Hypothesis 2 satisfies the assumption of homoscedasticity.

Non-

multicollinearity: Table 7 and Table 9 present results suitable for the validation of the nonmulticollinearity of secondary data for Hypothesis 2. Table 7 and Table 9 provide VIF statistics and Pearson Correlations statistics of secondary data for Hypothesis 2 respectively. The econometric model for Hypothesis 2 depicts a VIF statistic values of less than 5, and respective Pearson Correlations statistic values of less than 0.85. Therefore, Multivariable Dataset 2 for Hypothesis 2 satisfies the assumption of non-multicollinearity.

Non-autocorrelation: Table 10 presents results suitable for the validation of the nonautocorrelation of secondary data for Hypothesis 2. Table 10 provide a Durbin-Watson statistic value of secondary data for Hypothesis 2. The Durbin-Watson statistic value of econometric model for Hypothesis 2 is within the recommended range of 1.5 to 2.5. Therefore, Multivariable Dataset 2 for Hypothesis 2 satisfies the assumption of non-autocorrelation. The screening of Multivariable Dataset 2 for Hypothesis 2 proves that the dataset satisfies all the assumptions of multiple linear regression. Therefore, Multivariable Dataset 2 for Hypothesis 2 is valid for multiple linear regression in the estimation of Multivariable Regression Model 2. Multivariable Dataset 3 for Hypothesis 3: Figures 13, 14, 15 and 16; and tables 11, 12, 14 and15 present results appropriate for the validation or the disapproval of secondary data forHypothesis 3 (Appendix F3a and Appendix F3b).Normality: Figure 13, Figure

14 and Table 11 present results suitable for the validation of the normality of secondary data for Hypothesis 3. Figure 13 and Figure 14 present a normal probability plot and a histogram of secondary data for Hypothesis 3 respectively. Table 11 presents residual statistics of the econometric model for Hypothesis 3. The normal probability plot and the histogram of the econometric model for Hypothesis 3 depict close approximation of normal distribution of standardised residuals. Casewise diagnostics depict no standardised residuals that exceed the cutoff value of |2|. Therefore, Multivariable Dataset 3 for Hypothesis 3 satisfies the assumption of normality. Linearity: Figure 15 and

Figure 16 present results appropriate for the validation of the linearity of secondary data for Hypothesis 3. Figure 15 and Figure 16 present a scatter plot and partial regression plots of secondary data for Hypothesis 3 respectively. The scatter plot and the partial regression plots of the econometric model for Hypothesis 3 depict the presence of linearity. The scatter plot and the partial regression plots depict random arrays that suggest linear distribution of residuals. Therefore, Multivariable Dataset 3 for Hypothesis 3 satisfies the assumption of linearity.

Homoscedasticity: Figure 15 and Figure 16 present results suitable for the validation of the homoscedasticity of secondary data for Hypothesis 3. Figure 15 and Figure 16 present a scatter plot and partial regression plots of secondary data for Hypothesis 3 respectively. The scatter plot and the partial regression plots of econometric model for Hypothesis 3 depict the presence of homoscedasticity. The scatter plots and the partial regression plots depict random arrays that suggest constant variance of residuals. Therefore, Multivariable Dataset 3 for Hypothesis 3 satisfies the assumption of homoscedasticity.

Non-multicollinearity: Table 12 and Table 14

present results suitable for the validation of the non-multicollinearity of secondary data for Hypothesis 3. Table 12 and Table 14 provide VIF statistics and Pearson Correlations statistics of secondary data for Hypothesis 3 respectively. The econometric model for Hypothesis 3 depicts VIF statistics of less than 5, and respective Pearson Correlations statistic values of less than 0.85. Therefore, Multivariable Dataset 3 for Hypothesis 3 satisfies the assumption of nonmulticollinearity. Non-autocorrelation: Table 15 presents results suitable for the validation of the non-autocorrelation of secondary data for Hypothesis 3. Table 15 presents a Durbin-Watson statistic value of secondary data for Hypothesis 3. The Durbin-Watson statistic value of the multivariable econometric model is within the recommended range of 1.5 to 2.5. Therefore, Multivariable Dataset 3 for Hypothesis 3 satisfies the assumption of nonautocorrelation. The screening of Multivariable Dataset 3 for Hypothesis 3 verifies that the dataset satisfies all the assumptions of multiple linear regression. Therefore, Multivariable Dataset 3 for Hypothesis 3 is valid for multiple linear regression in the estimation of Multivariable Regression Model 3.

Validation of Multivariable Dataset 4 for Hypothesis 4: Figures 18, 19, 20 and 21; and tables 16, 17, 19 and 20 present results appropriate for the validation or the disapproval of secondary data for Hypothesis 4 (Appendix F4a and Appendix F4b).

Normality: Figure 18, Figure 19 and Table 16 present results suitable for the validation of the normality of secondary data for Hypothesis 4. Figure 18 and Figure 19 present a normal probability plot and a histogram of secondary data for Hypothesis 4 respectively. Table 16 presents residual statistics of the econometric model for Hypothesis 4. The normal probability plot and the

histogram of the econometric model for Hypothesis 4 depict close approximation of normal distribution of standardised residuals. Casewise diagnostics depict no standardised residuals that exceed the cut-off value of |2|. Therefore, Multivariable Dataset 4 for Hypothesis 4 satisfies the assumption of normality. Linearity:

Figure 20 and Figure 21 present results appropriate for the validation of the linearity of secondary data for Hypothesis 4. Figure 20 and Figure 21 present a scatter plot and partial regression plots of secondary data for Hypothesis 4 respectively. The scatter plot and the partial regression plots of the multivariable econometric model depict the presence of linearity. The scatter plot and the partial regression plots depict random arrays that suggest linear distribution of residuals. Therefore, Multivariable Dataset 4 for Hypothesis 4 satisfies the assumption of linearity.

Figure 21 present results suitable for the validation of the homoscedasticity of secondary data for Hypothesis 4. Figure 20 and Figure 21 present a scatter plot and partial regression plots of secondary data for Hypothesis 4 respectively. The scatter plot and the partial regression plots of the multivariable econometric model depict the presence of homoscedasticity. The scatter plots and the partial regression plots depict random arrays that suggest constant variance of residuals. Therefore, Multivariable Dataset 4 for Hypothesis 4 satisfies the assumption of homoscedasticity.

present results suitable for the validation of the non-multicollinearity of secondary data for Hypothesis 4. Table 17 and Table 19 provide VIF statistics and Pearson Correlations statistics of secondary data for Hypothesis 4 respectively. The econometric model for Hypothesis 4 depicts VIF statistics of less than 5, and respective Pearson Correlations statistic values of less than 0.85. Therefore, Multivariable Dataset 4 for Hypothesis 4 satisfies the assumption of non-

Homoscedasticity: Figure 20 and

Non-multicollinearity: Table 17 and Table 19

multicollinearity.Non-autocorrelation:Table 20 presentsresults suitable for the validation of the non-autocorrelation of secondary data for Hypothesis 4.Table 16 presents a Durbin-Watson statistic value of secondary data for Hypothesis 4. The Durbin-
Watson statistic value of the multivariable econometric model is within the recommended range
of 1.5 to 2.5. Therefore, Multivariable Dataset 4 for Hypothesis 4 satisfies the assumption of non-
autocorrelation.The screening of Multivariable Dataset 4 for
Hypothesis 4 verifies that the dataset satisfies all the assumptions of multiple linear regression.Therefore, Multivariable Dataset 4 for Hypothesis 4 is valid for multiple linear regression in the
estimation of Multivariable Regression Model 4.

Confirmation of Hypotheses

The research study establishes the significance of the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The research study establishes the significance of the economic impacts of international air transport service market liberalisation on the international air transport service through confirming hypotheses (Field, 2009; Siegfried, 2015). **Criteria for the Confirmation of Hypotheses:** Critical to the confirmation of a particular hypothesis is the significance of the statistics of the regression coefficient of the independent variable of interest. However, underlying the statistical significance of the regression coefficient. Thus, the significance of the magnitude of the regression coefficient and the significance of the statistics of the regression coefficient and the significance of the impact of the independent variable (Field, 2009; Siegfried, 2015).

Significance of the magnitude of the regression

coefficient: Fundamental to the confirmation of the hypotheses is the significance of the magnitude of the regression coefficient of the bilateral indicator (dummy) variable which represents the regulatory status (restrictive or liberal) of the international air transport service market between members of a particular country-pair. The regression coefficient of the bilateral indicator variable is the ceteris paribus average change in the dependent variable for a binary (digital) change in the bilateral indicator variable while holding other estimators in the multivariable regression model constant. The sign and magnitude of the regression coefficient of the bilateral indicator variable in the multivariable regression model are examined to ascertain the level and the direction of the contribution of the bilateral indicator variable to the dependent variable. A magnitude that is greater than 0.001 is generally interpreted as significant (Field, 2009; InterVISTAS, 2006, 2015; Siegfried, 2015). Therefore, in this research study, a bilateral indicator that bears a regression coefficient greater than 0.001 in magnitude will be interpreted as significant in terms of magnitude, thereby confirming the alternative hypothesis, and rejecting the null hypothesis.

Other than the significance of the magnitude of the regression coefficient of the bilateral indicator variable, also crucial to the confirmation of a particular hypothesis is the significance of the statistics of the regression coefficient of the bilateral indicator variable. A t-statistic test indicates the statistical significance of the regression coefficient of the bilateral indicator variable against predetermined probability value (α -value) of significance. The regression coefficient of the bilateral indicator variable is statistically significant when the p-value of the regression coefficient of the bilateral indicator variable is less than the predetermined preferable α -value of significance. Preferable α -values of statistical significance of the magnitudes of regression coefficients range from 0.10-0.000 (Field, 2009; Siegfried, 2015). Therefore, in this research study, regression

coefficients bearing $0.10 \ge p$ -value ≥ 0.000 will be interpreted as statistically significant, thereby confirming the alternative hypothesis, and rejecting the null hypothesis.

Confirmation of Hypothesis 1: Tables 2-3 present results appropriate for the validation or the rejection of research Hypothesis 1.

The significance of the magnitude of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 1 for Hypothesis 1: Tables 2-3 present the regression coefficients of the multivariable regression model for Hypothesis 1. The table depicts a positive regression coefficient of 0.620 for the bilateral indicator variable. The magnitude of 0.620 for the regression coefficient of the bilateral indicator variable means that the international air passenger volume in liberal international air transport markets is 62% on average higher than the international air passenger volume in restrictive international air transport markets in the SADC (see Figure 7). The regression coefficient of 0.620 is significant in magnitude. Therefore, the magnitude of the actual economic impact of international air transport service market liberalisation on international air passenger volume is significant in the Southern African Development Community.

the statistics of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 1 for Hypothesis 1: Tables 2-3 presents statistics of the individual regression coefficients of the multivariable regression model for Hypothesis 1. Tables 2-3 depict a regression coefficient of magnitude 0.620 which bears a p-value of 0.102 for the bilateral indicator variable. The regression coefficient of the bilateral indicator variable is statistically significant at p-value = $0.10 = \alpha = 0.10$. Therefore, the statistics of the actual impact of international air transport service market liberalisation on international air passenger volume is significant in the Southern African Development Community. The findings on Hypothesis 1 confirm the alternative hypothesis (H1a) that the actual impact of international air transport service market liberalisation on international air passenger volume is significant, and reject the null hypothesis (H10) that the actual impact of international air transport service market liberalisation on international air passenger volume is not significant in the Southern African Development Community. The findings are consistent with the view of the existing body of empirical research that international air transport service market liberalisation promotes international air passenger demand (Brattle Group, 2002; InterVISTAS, 2006; Piermartini & Fache Rousová, 2008; Fu et al., 2010; Abate,

2013). The research study expects international air transport service market liberalisation to promote international air passenger demand in liberal international air transport service markets in the SADC (Brattle Group, 2002; InterVISTAS, 2006; Piermartini & Fache Rousová, 2008; Fu et al., 2010; Abate, 2013). International air transport service market liberalisation fosters competition in the international air transport service market through granting access and entry into the international air transport service market. International air transport service market competition promotes competition in international passenger airfares and international air transport service quality. The competition in international passenger airfares fosters the reduction of international passenger airfare, while the competition in international air transport service quality fosters the improvement of international air transport service quality fosters the improvement of international air transport service quality foster the growth of international air passenger demand (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

Confirmation of Hypothesis 2: Tables 7-8 present results suitable for the validation or the rejection of research Hypothesis 2.

The significance of the magnitude of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 2 for Hypothesis 2: Tables 7-8 present the regression coefficients of the multivariable regression model for Hypothesis 2. The table depicts a negative regression coefficient of -0.102 for the bilateral indicator variable. The magnitude of -0.102 for the regression coefficient of the bilateral indicator variable means that international passenger airfare in liberal international air transport markets is 10 US Cents on average less than the international passenger airfare on restrictive international air transport markets in the SADC (see Figure 12). The regression coefficient of -0.102 is significant in magnitude. Therefore, the magnitude of the actual impact of international air transport service market liberalisation on international passenger airfare is significant in the Southern African Development Community.

The significance of the statistics of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model for Hypothesis 2: Tables 7-8 present the statistics of the individual regression coefficients of the regression model for Hypothesis 2. Tables 7-8 depict a regression coefficient of magnitude -0.102 which bears a p-value of 0.032 for the bilateral indicator variable. The regression coefficient of the bilateral indicator variable is statistically significant at p-value = $0.032 < \alpha = 0.05$. Therefore, the statistics of the actual impact of international air transport service market liberalisation on international passenger airfare is significant in the Southern African Development Community.

The findings on Hypothesis 2 accept the alternative hypothesis (H2a) that the actual impact of international air transport service market liberalisation on international passenger airfare is significant, and reject the null hypothesis (H20) that the actual impact of international air transport service market liberalisation on international passenger airfare is not significant in the Southern African Development Community. The findings agree with the view of the existing body of empirical research that international air transport service market liberalisation reduces international passenger airfares (Myburgh et al., 2006; Peterson & Graham, 2008; Goetz & Vowles, 2009; Grančay, 2010; Adler et al., 2014; Gleave, 2014; Mattos & Fregnani, 2016; Hammond & Czaban, 2018).

The research study expects international air transport service market liberalisation to promote competitive international passenger service pricing on liberal international air transport service markets in the SADC (Myburgh et al., 2006; Peterson & Graham, 2008; Goetz & Vowles, 2009; Grančay, 2010; Adler et al., 2014; Gleave, 2014; Mattos & Fregnani, 2016; Hammond & Czaban, 2018). International air transport service market liberalisation fosters the reduction of international passenger airfare through promoting competition in international passenger airfares. International air transport service market liberalisation grants airlines the freedom to determine passenger airfares. The freedom to determine international passenger airfares fosters competition in international passenger airfares in turn fosters the reduction of international passenger airfares. The competition in international passenger airfares in turn fosters the reduction of international passenger airfare (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

3: Tables 12-13 present results suitable for the validation or the rejection of research Hypothesis
3. The significance of the magnitude

of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 3 for Hypothesis 3: Tables 12-13 present the regression coefficients of the multivariable regression model for Hypothesis 3. The table depicts a positive regression coefficient of 0.512 for the bilateral indicator variable. The magnitude of 0.512 for the regression coefficient of the bilateral indicator variable means that international passenger departure frequency in liberal international air transport markets is 51% on average higher than international passenger departure frequency in restrictive international air transport markets in the SADC (see Figure 17). The regression coefficient of 0.512 is significant in magnitude. Therefore, the magnitude of the actual impact of international air transport service market liberalisation on international passenger departure frequency is significant in the Southern African Development Community.

The significance of the statistics of the regression

coefficient of the bilateral indicator variable of Multivariable Regression Model 3 for **Hypothesis 3:** Tables 12-13 present the statistics of the individual regression coefficients of the regression model for Hypothesis 3. Tables 12-13 depict a regression coefficient of 0.512 which bears a p-value of 0.071 for the bilateral indicator variable. The regression coefficient of the bilateral indicator variable is statistically significant at p-value = $0.071 < \alpha = 0.10$. Therefore, the statistics of the actual impact of international air transport service market liberalisation on international passenger departure frequency is significant in the Southern African Development Community. The findings on Hypothesis 3 approve the alternative hypothesis (H3a) that the actual impact of international air transport service market liberalisation on international passenger departure frequency is significant, and disapprove the null hypothesis (H30) that the actual impact of international air transport service market liberalisation on international passenger departure frequency is not significant in the Southern African Development Community. The findings reinforce the view of the existing body of research that international air transport service market liberalisation promotes international air passenger departure frequencies (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2017; Tolcha & Eric, 2020). The

research study expects international air transport service market liberalisation to enhance
international passenger departure frequency in liberal international air transport markets in the SADC (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2017; Tolcha & Eric, 2020). International air transport service market liberalisation facilitates the increase of international passenger departure frequency through promoting competition in international passenger departure frequencies. International air transport service market liberalisation promotes competition in international passenger departure frequencies departure frequencies by granting airlines the freedom to access and enter the international air transport service market. The competition in international passenger departure frequencies facilitates the increase of international passenger departure frequencies facilitates the increase of international passenger departure frequency (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

Confirmation of Hypothesis 4: Tables 17-18 present results suitable for the validation or the rejection of research Hypothesis 4.

The significance of the magnitude of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 4 for Hypothesis 4: Tables 17-18 present the regression coefficients of the regression model for Hypothesis 4. The table depicts a positive regression coefficient of 0.532 for the bilateral indicator variable. The magnitude of 0.532 for the regression coefficient of the bilateral indicator variable means that international revenue passenger load factor in liberal international air transport markets is 53% on average higher than international revenue passenger load factor in restrictive international air transport markets in the SADC (see Figure 22). The regression coefficient of 0.532 is significant in magnitude. Therefore, the magnitude of the actual impact of international air transport service market liberalisation on international revenue passenger load factor is significant in the Southern African Development Community.

the statistics of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 4 for Hypothesis 4: Tables 17-18 present statistics of the individual regression coefficients of the regression model for Hypothesis 4. Tables 17-18 depict a regression coefficient of 0.532 which bears a p-value of 0.039 for the bilateral indicator variable. The regression coefficient of the bilateral indicator variable is statistically significant at p-value = $0.039 < \alpha =$ 0.05. Therefore, the statistics of the actual impact of international air transport service market liberalisation on international revenue passenger load factor is significant in the Southern African Development Community. The findings on Hypothesis 4 confirm the alternative hypothesis (H4a) that the actual impact of international air transport service market liberalisation on international revenue passenger load factor is significant, and reject the null hypothesis (H40) that the actual impact of international air transport service market liberalisation on international revenue passenger load factor is not significant in the Southern African Development Community. The findings align with the stand by the existing body of literature that international air transport service market liberalisation promotes international revenue passenger load factors (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2017; Tolcha & Eric, 2020).

The research study expects international air transport service market liberalisation to enhance international revenue passenger load factor of SADC national airlines on liberal international air transport markets in the SADC (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2017; Tolcha & Eric, 2020). International air transport service market liberalisation fosters the growth of international revenue passenger load factor through facilitating the increase of international revenue passenger kilometers. International air transport service market liberalisation grants airlines the freedom to access and enter international air transport service service markets of choice. The freedom to access and enter any international air transport service market permits an airline to operate as many international revenue passenger kilometers as possible and, thus, promoting international revenue passenger load factor (Abate & Christidis, 2020; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009). Confirmation of Hypothesis

5: According to Myburgh et al., (2006), the direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is a product function. Myburgh et al., (2006) define the product function of the direct impact of international air transport service market liberalisation on jobs in the T&T industry as follows (Myburgh et al., 2006, p. 34):

7. Multivariable Product Model 5 for Hypothesis 5

Direct Impact on Jobs = Direct Jobs in the Travel and Tourism Industry x

Tourist Spending as % of Consumption in the Travel and Tourism Industry x

Average Impact of Liberalization on Passenger Volume (15)

The average impact of international air transport service market liberalisation on international air passenger volume defines the direct impact of international air transport service market liberalisation on jobs in the T&T industry in the product function (Myburgh et al., 2006).

The significance of the magnitude of the direct impact of international air transport service market liberalisation on jobs in the T&T industry - Multivariable Product Model 5 for Hypothesis 5: The average impact of international air transport service market liberalisation on international air passenger volume is the regression coefficient for the bilateral indicator variable in Multivariable Regression Model 1 for Hypothesis 1. Multivariable Regression Model 1 for Hypothesis 1 depicts a regression coefficient of magnitude 0.620 for the bilateral indicator variable. Therefore, Multivariable Product Model 5 for Hypothesis 5 becomes:

8. Multivariable Product Model 5 for Hypothesis 5

Direct Impact on Jobs = Direct Jobs in the Travel and Tourism Industry x

Tourist Spending as % of Consumption in the

Travel and Tourism Industry x 62% (20)

The magnitude of 0.620 for the bilateral indicator variable in Multivariable Regression Model 1 for Hypothesis 1 means that direct jobs in the travel and tourism industry in country-pairs with liberal international air transport service markets are 62% times on average higher than direct jobs in the travel and tourism industry in country-pairs with restrictive international air transport service markets in the SADC. The regression coefficient of 0.620 is significant in magnitude. Therefore, the magnitude of the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant in the Southern African Development Community. The significance of

the statistics of the direct impact of international air transport service market liberalisation on jobs in the T&T industry - Multivariable Product Model 5 for Hypothesis 5: Multivariable Regression Model 1 for Hypothesis 1 depicts a regression coefficient of 0.620 that bears a p-value of 0.102 for the bilateral indicator variable. The regression coefficient of the bilateral indicator variable is statistically significant at p-value = $0.10 = \alpha = 0.10$. Therefore, the statistics of the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant in the Southern African Development Community.

The findings on Hypothesis 5 accept the alternative hypothesis (H5a) that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant, and disapprove the null hypothesis (H50) that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is not significant in the SADC. The findings are consistent with the stand by the existing body of research that the liberalisation of international air transport markets facilitates the creation of employment (Abate, 2013; Burghouwt et al., 2015; Myburgh et al., 2006). The research study expects international air transport service market liberalisation to enhance employment in the travel and tourism (T&T) industry in the SADC (Abate, 2013; Burghouwt et al., 2015; Myburgh et al., 2006). International air transport service market liberalisation promotes employment in the international air transport service sector and related industries by fostering the growth of international air passenger demand. International air transport service market liberalisation fosters the growth of international air passenger demand by promoting competition in international passenger airfares and international air transport service quality. International air transport service market liberalisation promotes competition in international passenger airfares by allowing airlines the freedom to determine international passenger airfares. International air transport service market liberalisation fosters competition in international air transport service quality by allowing the freedom to access and enter the international air transport service market. The competition in international passenger airfares promotes the reduction of international passenger airfare, whereas the competition in international air transport service quality facilitates the improvement of international air transport service quality. The reduction of international passenger airfare and the improvement of international air transport service quality promote international air passenger demand. The international air passenger demand promoted by the reduction of international passenger airfare and the improvement of international air transport service quality facilitates the creation of new jobs in the international air transport service sector and related industries (Button, 2009; Duncan &

Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

Chapter Summary

This research study establishes the significance of the magnitudes and the statistics of the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development.

The research study applies the quantitative approach to guide the statistical estimation of the economic impacts of international air transport service market liberalisation. The study applies the cross-sectional approach to evaluate the economic impacts of international air transport service market liberalisation. It employs the cross-sectional econometric models by InterVISTAS (2006, 2015), Myburgh et al. (2006), Abate (2013), and Abate and Christidis (2017, 2020) respectively to statistically estimate the economic impacts of international air transport service market liberalisation on the international air transport service. The study employs the secondary data analysis design within the quantitative approach to statistically estimate the significance of the economic impacts of international air transport service market liberalisation. The econometric models involve independent variables apart from the bilateral indicator variable to enhance the predictive power of the econometric models (InterVISTAS, 2006, 2015).

sample of country-pairs as the population and sample under examination respectively. The country-pairs generate cross-sectional data on international air traffic and other relevant variables for the research. The population is all country-pairs with signed bilateral air service agreements in the Southern African Development Community, and there is a population of 49 country-pairs with signed bilateral air service agreements in the SADC (see Appendix B). The sample of the country-

The study employs the population and

pairs under study is country-pairs with operational signed bilateral air service agreements, and the research study identifies the total population sample of 38 country-pairs with operational signed bilateral air service agreements in the SADC. It identifies 21 liberal international air transport service markets, and 17 restrictive international air transport service markets in country-pairs with operational signed bilateral air service agreements in the SADC. It dentifies 21 liberal international air transport service markets in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community (see Appendix E7).

The research study also employs the population and sample of secondary data sources for data collection. The secondary data sources are reservoirs from which cross-sectional data generated by the country-pairs may be accessed. The population is all non-published and published electronic and printed secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community, while the sample of the secondary data sources for data collection is published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community, while the sample of the secondary data sources for data collection is published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community. Published and non-published electronic secondary data sources for open access such as e-books, e-journals, e-magazines/newspapers, and e-documents are available for free access in the public domain. The research

study employs the Internet and electronic libraries to access published and non-published electronic secondary data sources such as e-books, e-journals, e-magazines/newspapers and e-documents. Civil aviation authorities in the SADC establish private electronic libraries that provide access to non-published and published electronic data sources. The research study corroborates two or more sources of secondary data to enhance the trustworthiness, reliability and validity of the results. The data collection exercise produces

Multivariable Dataset 1 for Hypothesis 1 (see summary in Appendix F1), Multivariable Dataset 2 for Hypothesis 2 (see summary in Appendix F2), Multivariable Dataset 3 for Hypothesis 3 (see summary in Appendix F3), and Multivariable Dataset 4 for Hypothesis 4 (see summary in Appendix F4). The research study applies multiple

linear regression analysis to estimate the economic impacts of international air transport service market liberalisation. Multiple linear regression fits multivariable econometric models into respective multivariable datasets employing the statistical package for social science (SPSS), and results are presented for the respective questions/hypotheses of the research study (see Figures 3-

22 and Tables 1-20). The research study examines the significance of the magnitudes and the statistics of the economic impacts of international air transport service market liberalisation on the international air transport service in the SADC to confirm the research hypotheses. However, critical to the confirmation of the hypotheses is the validation of the secondary data for multiple linear regression (Field, 2009; Siegfried, 2015). Multiple linear regression assumes that the multivariable dataset exhibits normality, linearity, homoscedasticity, non-multicollinearity and non-autocorrelation for reliable estimation of the impacts of independent variables of a particular multivariable regression model. Therefore, normality, linearity, homoscedasticity, non-multicollinearity, and non-correlation define the criteria against which a multivariable dataset for multiple linear regression is validated (Field, 2009; Osborne & Waters, 2002; Siegfried, 2015). The research study finds that the multivariable datasets for the four multivariable econometric models satisfy the assumption of normality. It finds that the multivariable datasets for the four multivariable econometric models also satisfy the assumption of linearity. The research study finds that the multivariable datasets for the four multivariable econometric models satisfy the assumption of homoscedasticity. It finds that the multivariable

datasets for the four multivariable econometric models also satisfy the assumption of nonmulticollinearity. The research study finds that the multivariate datasets for the four multivariate econometric models satisfy the assumption of non-autocorrelation. Therefore, the multivariable datasets for the four multivariable econometric models are valid for multiple linear regression.

The research study establishes the significance of the economic impacts of international air transport service market liberalisation on the international air transport service through confirming hypotheses (Field, 2009; Siegfried, 2015). It examines the significance of the magnitudes and the statistics of the regression coefficients of the bilateral indicator variables to confirm the hypotheses. The research study finds that the magnitude of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 1 for Hypothesis 1 is significantly 0.620. The research study finds that the statistics of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 1 for Hypothesis 1 is significant at p-value = 0.102. Therefore, international air passenger volume on liberal international air transport markets is significantly 62% more than international air passenger volume on restrictive international air transport markets in the SADC. The findings support the alternative hypothesis (H1a) that the actual impact of international air transport service market liberalisation on international air passenger volume is significant, and reject the null hypothesis (H10) that the actual impact of international air transport service market liberalisation on international air passenger volume is not significant in the SADC.

The research study finds that the magnitude of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 2 for Hypothesis 2 is significant at 0.102. The research study finds that the statistics of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 2 for Hypothesis 2 is significant at p-value = 0.032.

Therefore, international passenger airfare on liberal international air transport markets is significantly 10 US Cents less than international passenger airfare on restrictive international air transport markets in the SADC. The findings support the alternative hypothesis (H2a) that the actual impact of international air transport service market liberalisation on international passenger airfare is significant, and reject the null hypothesis (H20) that the actual impact of international air transport service market liberalisation on international air transport service market liberalisation on international air transport service market liberalisation. The research

study finds that the magnitude of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 3 for Hypothesis 3 is significant at 0.512. The research study finds that the statistics of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 3 for Hypothesis 3 is significant at p-value = 0.071. Therefore, international passenger departure frequency on liberal international air transport markets is significantly 51% higher than international passenger departure frequency on restrictive international air transport markets in the SADC. The findings approve the alternative hypothesis (H3a) that the actual impact of international air transport service market liberalisation on international passenger departure frequency is significant, and disapprove the null hypothesis (H30) that the actual impact of international air transport service market liberalisation on international passenger departure frequency is not significant in the SADC.

The research study finds that the magnitude of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 4 for Hypothesis 4 is significant at 0.532. The research study finds that the statistics of the regression coefficient of the bilateral indicator variable of Multivariable Regression Model 4 for Hypothesis 4 is significant at p-value = 0.039. Therefore, international revenue passenger load factor of SADC national airlines on liberal

international air transport markets is significantly 53% higher than international revenue passenger load factor of SADC national airlines on restrictive international air transport markets in the SADC. The findings approve the alternative hypothesis (H4a) that the actual impact of international air transport service market liberalisation on international revenue passenger load factor is significant, and reject the null hypothesis (H40) that the actual impact of international air transport service market liberalisation on international revenue passenger load factor is not significant in the SADC.

The research study finds that the magnitude of the direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant at 0.620 in the SADC. The research study finds that the statistics of the direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant at p-value = 0.102. Therefore, direct jobs in the travel and tourism industry in SADC countries with liberal international air transport markets are significantly 62% times higher than direct jobs in the travel and tourism industry in SADC countries with restrictive international air transport markets. The findings support the alternative hypothesis (H5a) that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant, and reject the null hypothesis (H50) that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is not significant in the SADC. In summary, the findings of the research study establish that the magnitudes and the statistics of the economic impacts of international air transport service market liberalisation on the international air transport service are significant in the Southern African Development Community.

CHAPTER 5: IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSIONS

International air transport service market liberalisation has been believed by many as the right direction to the enhancement of competition, and the promotion of consumer welfare. The liberalisation of the international air transport service market has also been advocated by many as the right direction for international air transport services to benefit the most out of the international air transport services to benefit the most out of the international air transport services to benefit the most out of the international air transport services to benefit the most out of the international air transport services to benefit the most out of the international air transport service market (Button, 2008; InterVISTAS, 2006; 2014; 2015; Myburgh et al., 2006; Schlumberger, 2010). The research

study has been prompted by the persistent poor economic performance of the international air transport service in the Southern African Development Community. The economic performance of the international air transport service continues to be poor despite some economies experiencing some international air transport service market liberalisation through the Yamoussoukro Decision in the Southern African Development Community. However, it seems international air transport service market liberalisation through the international air transport service market liberalisation through the Yamoussoukro Decision in the Southern African Development Community. However, it seems international air transport service market liberalisation has had multiple economic impacts on the international air transport service in the SADC (Mhlanga, 2017; Myburgh et al., 2006; Pirie, 2006; Surovitskikh & Lubbe, 2015). Nevertheless, the main challenge has been lack of adequate knowledge on the significance of the economic impacts of international air transport service market liberalisation on the international air transport service in the SADC. The purpose of this quantitative research study is

to establish the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development. The findings of this research study, firstly, may influence states with pessimistic attitude towards the concept of international air transport service market liberalisation to embrace the concept in the Southern African Development Community. Secondly, the findings of the research study may invigorate economies that experienced some international air transport service market liberalisation to invest serious efforts towards full international air transport service market liberalisation through the Yamoussoukro Decision in the Southern African Development Community. Thirdly, the research study will also inform the research world about the magnitude and the statistical significance of the economic impacts of international air transport service market liberalisation in the SADC, and thus, may provoke further research on the topic. Fourthly, the research study contributes to the existing body of research on the economic impacts of international air transport market liberalisation. The research study considers the quantitative approach as appropriate to guide the statistical estimation of the economic impacts of international air transport service market liberalisation. The study considers the cross-sectional approach as appropriate for the evaluation of the economic impacts of international air transport service market liberalisation. It employs the cross-sectional econometric models by InterVISTAS (2006, 2015), Myburgh et al. (2006), Abate (2013), and Abate and Christidis (2017, 2020) respectively to statistically estimate the economic impacts of international air transport service market liberalisation. It considers the secondary data analysis design as an appropriate strategy. The research study defines the

population and sample of country-pairs under examination. The research study defines the population as all country-pairs with signed bilateral air service agreements in the Southern African

Development Community. There is a population of 49 country-pairs with signed bilateral air service agreements in the SADC (see Appendix B). The research study defines the sample under examination as country-pairs with operational signed bilateral air service agreements in the SADC. Employing the total population purposive sampling technique, the research study identifies a total population sample of 38 country-pairs with operational signed bilateral air service agreements in the SADC. The study identifies 21 liberal international air transport service markets, and 17 restrictive international air transport service markets in country-pairs with operational signed bilateral air service agreements in the SADC.

E7). The research study also defines the population and the sample of secondary data sources for data collection. Secondary data sources are reservoirs from which cross-sectional data generated by the country-pairs may be collected. The research study defines the population of the secondary data sources as all non-published and published electronic and printed secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community. However, the research study defines the sample of secondary data sources for data collection as published and non-published electronic secondary sources of data on the research variables in the Southern African Development Community. Development Community.

The research study employs the Internet and electronic libraries to access published and non-published electronic secondary data sources such as e-books, e-journals, emagazines/newspapers and e-documents. Civil aviation authorities in the SADC establish private electronic libraries that provide access to non-published and published electronic data sources. The research study corroborates two or more sources of secondary data to enhance the trustworthiness, reliability and validity of the results.

some limitations that affect the quality of research results. The findings of the research study may be underestimated or overestimated due to limitations of the econometric models, research method, definition of restrictive and liberal international air transport service markets, and secondary data. Econometric models may have inadvertently missed out influential covariates and, therefore, this may overestimate or underestimate results of the study. Inappropriate research methods generate constraints that may enhance biases for research results. An inappropriate definition of restrictive and liberal international air transport service markets may enhance biases for results of the study. Scarcity of secondary data in certain instances leads to the use of proxies of the actual secondary data and, therefore, may underestimate or overestimate results of the study.

Various professional research associations, government research agencies, and academic institutions have crafted special codes, rules, and policies that assure ethical conduct of research (Johnston, 2017; Koziol & Arthur, 2011; Law, 2006; Tripathy, 2013). The Unicaf University designed Research Ethics Application Form that ensures ethical conduct of research. The Unicaf Research Ethics Committee (UREC) formally approved the Research Ethics Application Form (REAF) for the research study in April, 2021 (see Appendix G). The current research strives to address ethical issues of honesty, objectivity, integrity, openness, confidentiality, responsible publication, social responsibility and legality.

This chapter draws implications, recommendations for application, recommendations for future research, and conclusions on the entire research study. Therefore, the chapter is organised into four sections namely Implications, Recommendations for Application, Recommendations for Future Research, and Conclusions.

Implications

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The research study estimates the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. Specifically, it estimates the impacts of international air transport service market liberalisation on international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor. The research study further examines the impact of international air transport service market liberalisation on direct employment in the travel and tourism industry in the SADC. Basing on the findings of the research study, the research study draws some implications. These implications constitute the framework for the recommendations for application and recommendations for future research.

Research Question 1/Hypothesis 1

The evidence and conclusion drawn on Hypothesis 1 are strong enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are necessary in order to optimally increase international air passenger volume in the Southern African Development Community.

Findings on Hypothesis 1 show that the international air passenger volume in liberal international air transport markets is significantly 62% on average higher than the international air passenger volume in restrictive international air transport markets in the Southern African Development Community. The findings approve the alternative hypothesis that the actual impact of international air transport service market liberalisation on international air passenger volume is significant, and reject the null hypothesis that the actual impact of international air transport service market liberalisation on international air transport service market liberalisation of international air transport service market liberalisation on international air passenger volume is not significant in the Southern African Development Community.

will always be some limitations that may constrain the quality of research findings. The findings of the research on Hypothesis 1 might be underestimated or overestimated due to the scarcity of secondary data on international air passenger volume. The scarcity of secondary data on international air passenger volume has led to the use of international air passenger seats as a proxy of international air passenger volumes. Use of international air passenger seats as a proxy of international air passenger volumes might limit the estimation of the findings on Hypothesis 1.

The findings on Hypothesis 1 address the research problem and purpose. The purpose of the research study is to establish the significance of the magnitude and the statistics of the impact of international air transport service market liberalisation on international air passenger volume in the Southern African Development Community. The research study establishes that the magnitude and the statistics of the impact of international air passenger volume are significant in the SADC. The evidence on Hypothesis 1 is consistent with the capitalism economic worldview. The evidence on Hypothesis 1 shows that international air transport service market liberalisation to promote demand. The capitalism economic worldview advocates market liberalisation to promote demand. The capitalism economic worldview believes that market liberalisation promotes demand through fostering the reduction of market price and the improvement of service quality (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The findings on Hypothesis 1 are consistent with the existing body of empirical research on the economic impacts of international air transport service market liberalisation. The existing body of empirical research on the economic impacts of international air transport service market liberalisation is of the view that international air transport service market liberalisation promotes international air passenger volume through fostering the reduction of international passenger airfare and the improvement of international air transport service quality (Abate, 2013; Brattle Group, 2002; Fu et al., 2010; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Piermartini & Fache Rousová, 2008).

This research study expects the findings on Hypothesis 1. The research study expects international air transport service market liberalisation to promote international air passenger demand through fostering international air transport service market competition and improvement of international air transport service quality. The research study expects international air transport service market competition to promote international air passenger demand through facilitating the reduction of international passenger airfare (Abate, 2013; Brattle Group, 2002; Fu et al., 2010; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Piermartini & Fache Rousová, 2008) in the SADC. There are

some implications from Hypothesis 1. The evidence and conclusion on Hypothesis 1 point to the tremendous significance of international air transport service market liberalisation in the promotion of international air passenger volume in the Southern African Development Community. The evidence and conclusion underscore the importance of developing further international air transport service market liberalisation reforms that fully liberalise the international air transport service market in order to optimally increase international passenger volume in the SADC. The significance of

the impact of international air transport service market liberalisation on international air passenger volume is relatively an under-researched topic in the Southern African Development Community. Therefore, knowledge on the significance of the impact of international air transport service market liberalisation on international air passenger volume in the SADC contributes to the existing body of knowledge on the economic impacts of international air transport service market liberalisation.

Research Question 2/Hypothesis 2

The evidence and conclusion drawn on Hypothesis 2 are significant enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are necessary in order to optimally reduce international passenger airfare in the Southern African Development Community. Findings on Hypothesis 2 show that the international passenger airfare in liberal international air transport markets is significantly 10 US Cents less than the international passenger airfare in restrictive international air transport markets in the SADC. The findings confirm the alternative hypothesis that the actual impact of international air transport service market liberalisation on international passenger airfare is significant, and disapprove the null hypothesis that the actual impact of international air transport service market liberalisation on international passenger airfare is not significant in the Southern African Development Community.

Nonetheless, findings on Hypothesis 2 might be underestimated or overestimated due to the limitations of fitted values of international passenger volume. The endogeneity between passenger demand and passenger airfare has led to two-stage least squares (2SLS) regression analysis involving fitted values of international passenger volume in the econometric model for Hypothesis 2. Therefore, the fitted values of international passenger volume might limit the estimation of the findings on Hypothesis 2.

The findings on Hypothesis 2 respond to the research problem and purpose. The purpose of the research study is to establish the significance of the magnitude and the statistics of the impact of international air transport service market liberalisation on international passenger airfare in the Southern African Development Community. The research study establishes that the magnitude and the statistics of the impact of international air transport service market liberalisation on international passenger airfare are significant in the SADC. The

evidence on Hypothesis 2 is consistent with the capitalism economic theory. The evidence on Hypothesis 2 shows that international air transport service market liberalisation fosters the reduction of international passenger airfare. The capitalism economic worldview advocates market liberalisation to foster the reduction of market price. The capitalism economic theory believes that market liberalisation fosters the reduction of market price through granting service providers the freedom to determine market prices (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The evidence on Hypothesis 2

is consistent with the view of the existing body of empirical research on the economic impacts of international air transport service market liberalisation. The existing body of empirical research on the economic impacts of international air transport service market liberalisation believes that international air transport service market liberalisation facilitates the reduction of international passenger airfare through fostering competition in international passenger airfares (Adler et al., 2014; Gleave, 2014; Goetz & Vowles, 2009; Grančay, 2010; Hammond & Czaban, 2018; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Mattos & Fregnani, 2016; Myburgh et al., 2006; Peterson & Graham, 2008). This research study expects the findings on Hypothesis 2. The research study expects international air transport service market liberalisation to foster the reduction of international passenger airfare through promoting competition in international passenger airfares. It expects international air transport service market liberalisation to promote

competition in international passenger airfares by granting airlines the freedom to determine international passenger airfares (Adler et al., 2014; Gleave, 2014; Goetz & Vowles, 2009; Grančay, 2010; Hammond & Czaban, 2018; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Mattos & Fregnani, 2016; Myburgh et al., 2006; Peterson & Graham, 2008) in the SADC.

There are some implications from Hypothesis 2. The evidence and conclusion on Hypothesis 2 imply that international air transport service market liberalisation is significant in the reduction of international passenger airfare in the SADC. The evidence and conclusion underline the importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport market in order to optimally reduce international passenger airfare in the SADC.

The significance of the impact of international air transport service market liberalisation on international passenger airfare is relatively an under-studied topic in the Southern African Development Community. Therefore, knowledge on the significance of the impact of international air transport service market liberalisation on international passenger airfare in the SADC builds on the existing body of knowledge on the economic impacts of international air transport service market liberalisation.

Research Question 3/Hypothesis 3

The evidence and conclusion on Hypothesis 3 are significant enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport service market are necessary in order to optimally increase international passenger departure frequency in the Southern African Development Community.

Findings on Hypothesis 3 indicate that the international passenger departure frequency in liberal international air transport service markets is significantly 51% higher than the international

passenger departure frequency in restrictive international air transport markets in the SADC. The findings on Hypothesis 3 confirm the alternative hypothesis that the actual impact of international air transport service market liberalisation on international passenger departure frequency is significant, and reject the null hypothesis that the actual impact of international air transport service market liberalisation on international passenger departure frequency is not significant in the SADC. Nevertheless, findings on

Hypothesis 3 might be degraded due to the scarcity of secondary data on international passenger departure frequencies. The scarcity of secondary data on international passenger departure frequencies has led to the employment of international passenger airline flights as a proxy of international passenger departure frequency, and this proxy might underestimate or overestimate findings on Hypothesis 3. Furthermore, the endogeneity between passenger volume and passenger departure frequency has led to two-stage least squares (2SLS) regression analysis involving fitted values of international air passenger volume in the econometric model for Hypothesis 3. Therefore, the fitted values might underestimate or overestimate the findings on Hypothesis 3.

The findings on Hypothesis 3 respond to the research problem and purpose. The purpose of the research study is to establish the significance of the magnitude and the statistics of the impact of international air transport service market liberalisation on international passenger departure frequency in the Southern African Development Community. The research study establishes that the magnitude and the statistics of the impact of international air transport service market liberalisation on international passenger departure frequency are significant in the SADC. The evidence on Hypothesis 3 aligns with the capitalism economic theory. The evidence on Hypothesis 3 shows that international air transport service market liberalisation facilitates the increase of international passenger departure frequency. The capitalism economic worldview champions market liberalisation to facilitate the improvement of service quality. The capitalism economic theory believes that market liberalisation facilitates the improvement of service quality through granting foreign competitors access and entry into the market (Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The evidence on Hypothesis 3 aligns with the perspective of the existing body of empirical research on the economic impacts of international air transport service market liberalisation. The existing body of empirical research on the economic impacts of international air transport service market liberalisation believes that international air transport service market liberalisation facilitates the increase of international passenger departure frequency by granting foreign airlines access and entry into the international air transport service market (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Tolcha & Eric, 2020). This research study expects the findings on Hypothesis 3. The research study expects international air transport service market liberalisation to facilitate the increase of international passenger departure frequency through promoting competition in international passenger departure frequencies. It expects international air transport service market liberalisation to promote competition in international passenger departure frequencies by allowing new entrants to make transits and/or establish airline business in the international air transport service market (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Tolcha & Eric, 2020) in the SADC.

There are some implications from Hypothesis 3. The evidence and conclusion on Hypothesis 3 suggest the significance of international air transport service market liberalisation in the promotion of international passenger departure frequency in the SADC. The evidence and conclusion underscore the importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport market in order to optimally increase international passenger departure frequency in the SADC.

The significance of the impact of international air transport service market liberalisation on international passenger departure frequency is relatively an under-researched topic in the Southern African Development Community. Accordingly, knowledge on the significance of the impact of international air transport service market liberalisation on international passenger departure frequency in the SADC contributes to the existing body of knowledge on the economic impacts of international air transport service market liberalisation.

Research Question 4/Hypothesis 4

The evidence and conclusion on Hypothesis 4 are strong enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are necessary in order to optimally increase international revenue passenger load factor in the Southern African Development Community.

Findings on Hypothesis 4 indicate that the international revenue passenger load factor of SADC national airlines in liberal international air transport service markets is significantly 53% higher than the international revenue passenger load factor of SADC national airlines in restrictive international air transport markets in the SADC. The findings accept the alternative hypothesis that the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is significant, and disapprove the null hypothesis that the actual impact of international air transport service market liberalisation on international networks that the actual impact of international air transport service market liberalisation on international networks that the actual impact of international air transport service market liberalisation on international networks that the actual impact of international air transport service market liberalisation on international hypothesis that the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is not significant in the SADC.

Nevertheless, findings on Hypothesis 4 might be degraded due to the scarcity of secondary data on international revenue passenger kilometers. The scarcity of secondary data on international revenue passenger kilometers has led to the employment of calculated international revenue passenger kilometers as a proxy of international revenue passenger kilometers. Therefore, this proxy might underestimate or overestimate the findings on Hypothesis 4. The findings on Hypothesis 4 address the research problem and purpose. The purpose of the research study is to establish the significance of the magnitude and the statistics of the impact of international air transport service market liberalisation on international revenue passenger load factor in the Southern African Development Community. The research study establishes that the magnitude and the statistics of the impact of international air transport service market liberalisation on international revenue passenger load factor are significant in the SADC. The evidence on Hypothesis 4 agrees with the capitalism economic theory. The evidence on Hypothesis 4 shows that international air transport service market liberalisation facilitates the increase of international revenue passenger load factor. The capitalism economic theory advocates market liberalisation to promote load factor. The capitalism economic worldview believes that market liberalisation promotes load factor through facilitating capacity utilisation (Abate & Christidis, 2020; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009). The evidence on Hypothesis 4 agrees

with the existing body of empirical research on the economic impacts of international air transport service market liberalisation. The existing body of empirical research on the economic impacts of international air transport service market liberalisation is of the view that international air transport service market liberalisation facilitates the growth of international revenue passenger load factors through promoting international revenue passenger kilometers (Abate, 2013; Abate & Christidis, 2017, 2020; Burghouwt et al., 2015; InterVISTAS, 2017; Tolcha & Eric, 2020).

This study expects the findings on Hypothesis 4. The research study expects international air transport service market liberalisation to foster the growth of international revenue passenger load factor through promoting international revenue passenger kilometers. It expects international air transport service market liberalisation to grant airlines the freedom to access and enter international air transport service markets of their choice to enhance international revenue passenger kilometers (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2017; Tolcha & Eric, 2020) in the SADC.

There are some implications drawn on Hypothesis 4. The evidence and conclusion on Hypothesis 4 point to the enormous significance of international air transport service market liberalisation in the promotion of international revenue passenger load factor in the SADC. The evidence and conclusion emphasize the importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport service market in order to optimally increase international revenue passenger load factor in the SADC.

The significance of

the impact of international air transport service market liberalisation on international revenue passenger load factor is relatively an under-researched topic in the Southern African Development Community. Therefore, knowledge on the significance of the impact of international air transport service market liberalisation on international revenue passenger load factor in the SADC contributes to the existing body of knowledge on the economic impacts of international air transport service market liberalisation.

Research Question 5/Hypothesis 5

The evidence and conclusion on Hypothesis 5 are strong enough to imply that further

international air transport service market liberalisation initiatives to fully liberalise the international air transport market are necessary in order to optimally increase direct jobs in the travel and tourism industry in the Southern African Development Community.

Findings on Hypothesis 5 show that direct jobs in the travel and tourism industry in SADC countries with liberal international air transport markets are significantly 62% times higher than direct jobs in the travel and tourism industry in SADC countries with restrictive international air transport markets. The findings accept the alternative hypothesis that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant, and reject the null hypothesis that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is not significant in the SADC. Nevertheless, limitations are

inevitable in research. Findings on Hypothesis 5 might be underestimated or overestimated due to limitations of Multivariable Product Model 5 for Hypothesis 5. The impact of international air transport service market liberalisation on direct jobs in the T&T industry is essentially the impact of liberalization on international passenger volume. Therefore, the impact of international air transport service market liberalisation on direct jobs in the T&T industry might be limited by the regression of Multivariable Econometric Model 1 for Hypothesis 1.

The findings on Hypothesis 5 address the research problem and purpose. The purpose of the research study is to establish the significance of the magnitude and the statistics of the direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry in the Southern African Development Community. The research study establishes that the magnitude and the statistics of the direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry are significant in the SADC. The evidence on Hypothesis 5 agrees with the capitalism economic worldview. The evidence on Hypothesis 5 shows that international air transport service market liberalisation fosters the increase of employment in the travel and tourism industry. The capitalism economic worldview champions market liberalisation to foster the creation of jobs in industries. The capitalism economic worldview believes that market liberalisation fosters the creation of employment in industries through promoting demand (Button, 2009; Cetin & Eryigit, 2018; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The evidence on Hypothesis 5 agrees with the view of the existing body of empirical research on the economic impacts of international air transport service market liberalisation. The existing body of empirical research on the economic impacts of international air transport service market liberalisation believes that international air transport service market liberalisation promotes the creation of jobs in the T&T industry through promoting international air passenger demand (Burghouwt et al., 2015; Myburgh et al., 2006).

This research study expects the findings on Hypothesis 5. The research study expects international air transport service market liberalisation to promote the creation of employment in the international air transport service sector and related industries such as the travel and tourism industry through promoting international air passenger demand. It expects international air transport service market liberalisation to promote international air passenger demand by facilitating the reduction of international passenger airfare and the improvement of international air transport service quality (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Myburgh et al., 2006) in the SADC.

There are some implications drawn on Hypothesis 5. The evidence and conclusion on

Hypothesis 5 point to the significance of the liberalisation of international air transport markets in the promotion of direct employment in the T&T industry in the SADC. The evidence and conclusion underline the importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport market in order to optimally increase direct employment in the T&T industry in the SADC.

The significance of the direct impact of international air transport service market liberalisation on jobs in the T&T industry is relatively an under-studied topic in the Southern African Development Community. Therefore, knowledge on the significance of the direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry in the SADC builds on the existing body of knowledge on the economic impacts of international air transport service market liberalisation.

Recommendations for Application

Basing on the implications from the hypotheses, the research study derives recommendations for application. The recommendations for application provide the framework of further international air transport service market liberalisation initiatives in the Southern African Development Community.

Research Question 1/Hypothesis 1

The research study recommends that states with restrictive international air transport service market regulatory regimes should review their international air transport service market regulatory frameworks in order to promote international air passenger volume in the Southern African Development Community. The research study also recommends that states that experienced some international air transport service market liberalisation should fully liberalise the international air transport service market through the Yamoussoukro Decision (YD) in order to optimally increase international air passenger volume in the SADC. Heads of state in Africa resolved to liberalise the intra-Africa international air transport service market via the Yamoussoukro Decision. The Yamoussoukro Decision removes all government restrictions and protectionism over air traffic rights, capacity, airfare, designation, and frequency within Africa (Myburgh et al., 2006; Schlumberger, 2009).

The evidence and conclusion on Hypothesis 1 are strong enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are necessary in order to optimally increase international air passenger volume in the Southern African Development Community. The evidence on Hypothesis 1 shows that the international air passenger volume in liberal international air transport service markets is significantly 62% higher than the international air passenger volume in restrictive international air transport service markets in the Southern African Development Community. The findings confirm the alternative hypothesis (H1a) that the actual impact of international air transport service market liberalisation on international air passenger volume is significant, and reject the null hypothesis (H10) that the actual impact of international air transport service market liberalisation on international air passenger volume is not significant in the Southern African Development Community. The evidence and

conclusion on Hypothesis 1 point to the significance of international air transport service market liberalisation in the promotion of international air passenger volume in the Southern African Development Community. The evidence underscores the importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport service market for optimal increase of international air passenger volume in the SADC. Therefore, the research study recommends that states with restrictive international air transport service market regulatory regimes should review their international air transport service market regulatory frameworks in order to promote international air passenger volume in the SADC. The research study also recommends that states that undertook some international air transport service market liberalisation initiatives should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to realise optimal increase of international air transport service market through the SADC. The research study expects the fully liberalised international air transport service market to grant competitors unrestricted freedom to access and enter the international air transport service market. This freedom is expected to facilitate optimal increase of international air passenger demand through fostering the reduction of international passenger airfare and the improvement of international air transport service quality (Cetin & Eryigit, 2018). Therefore, the research study expects full international air transport service market liberalisation through the Yamoussoukro Decision to optimally increase international air passenger volume in the Southern African Development Community.

Research Question 2/Hypothesis 2

The research study recommends that states with restrictive international air transport service market regulatory regimes should review their international air transport service market regulatory frameworks in order to foster the reduction of international passenger airfare in the Southern African Development Community. The research study also recommends that states that undertook some international air transport service market liberalisation initiatives should fully liberalise the international air transport service market through the Yamoussoukro Decision for optimal reduction of international passenger airfare in the SADC.

The evidence and conclusion on Hypothesis 2 are significant enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are necessary in order to optimally reduce international passenger airfare in the Southern African Development Community. The evidence on Hypothesis 2 shows that the international passenger airfare in liberal international air transport service markets is significantly 10 US Cents less than the international passenger airfare in restrictive international air transport service markets in the Southern African Development Community. These findings accept the alternative hypothesis (H2a) that the actual impact of international air transport service market liberalisation on international passenger airfare is significant, and disapprove the null hypothesis (H20) that the impact of international air transport service market liberalisation on international passenger airfare is not significant in the Southern African Development Community. The evidence and

conclusion on Hypothesis 2 imply that international air transport service market liberalisation is significant in the reduction of international passenger airfare in the Southern African Development Community. The findings emphasise the importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport service market for optimal reduction of international passenger airfare in the SADC. Therefore, the research study recommends that states with restrictive international air transport service market regulatory regimes in the SADC should review their international air transport service market regulatory frameworks in order to foster the reduction of international passenger airfare in the SADC. The research study also recommends that states that experienced some international air transport service market through the Yamoussoukro Decision for optimal reduction of international air transport service market through the SADC. The research study expects the fully liberalised international air transport service service market to grant unrestricted freedom to determine international passenger airfares. This

freedom is expected to facilitate optimal reduction of international passenger airfare through promoting competition in international passenger airfares (Cetin & Eryigit, 2018).

Therefore, full international air transport service market liberalisation through the Yamoussoukro Decision is expected to optimally reduce international passenger airfare in the Southern African Development Community.

Research Question 3/Hypothesis 3

The research study recommends that states with restrictive international air transport service market regulatory frameworks should review their international air transport service market regulatory regimes in order to foster the increase of international passenger departure frequency in the Southern African Development Community. The research study also recommends that states that experienced some international air transport service market liberalisation should fully liberalise the international air transport service market via the Yamoussoukro Decision for optimal increase of international passenger departure frequency in the SADC.

on Hypothesis 3 are significant enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport service market are necessary for optimal increase of international passenger departure frequency in the Southern African Development Community. The evidence on Hypothesis 3 shows that the international passenger departure frequency in liberal international air transport service markets is significantly 51% higher than the international passenger departure frequency in restrictive international air transport service markets in the Southern African Development Community. The findings confirm the alternative hypothesis (H3a) that the actual impact of international air transport service market liberalisation on international passenger departure frequency is significant, and reject the null

The evidence and conclusion

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hypothesis (H30) that the actual impact of international air transport service market liberalisation on international passenger departure frequency is not significant in the Southern African Development Community.

The evidence and conclusion on Hypothesis 3 suggest the significance of international air transport service market liberalisation in the improvement of international passenger departure frequency in the Southern African Development Community. The findings stress the importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport service market for optimal increase of international passenger departure frequency in the SADC. Therefore, the research study recommends that states with restrictive international air transport service market regulatory regimes in the SADC should review their international air transport service market regulatory frameworks in order to foster the improvement of international passenger departure frequency in the SADC. The research study also recommends that states that undertook some international air transport service market liberalisation initiatives should fully liberalise the international air transport service market liberalisation air transport service market liberalisation initiatives should fully liberalise the international air transport service market liberalisation initiatives should fully liberalise the international air transport service market via the Yamoussoukro Decision for optimal increase of international passenger departure frequency in the SADC.

The research study expects the fully liberalised international air transport service market to grant competitors unrestricted freedom to access and enter the international air transport service market. This freedom is expected to facilitate optimal increase of international passenger departure frequency through promoting competition in international passenger departure frequencies (Cetin & Eryigit, 2018).

Therefore, the research study expects full international air transport service market

liberalisation reforms via the Yamoussoukro Decision to optimally increase international passenger departure frequency in the Southern African Development Community.

Research Question 4/Hypothesis 4

The research study recommends that states with restrictive international air transport service market regulatory frameworks should review their international air transport service market regulatory regimes in order to foster the improvement of international revenue passenger load factor in the Southern African Development Community. The research study also recommends that states that undertook some international air transport service market liberalisation initiatives should fully liberalise the international air transport service market via the Yamoussoukro Decision for optimal increase of international revenue passenger load factor in the SADC.

evidence and conclusion on Hypothesis 4 are significant enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are necessary in order to optimally increase international revenue passenger load factor in the Southern African Development Community. The evidence on Hypothesis 4 shows that the international revenue passenger load factor of SADC national airlines in liberal international air transport service markets is significantly 53% higher than the international revenue passenger load factor of SADC national airlines in restrictive international air transport service markets in the Southern African Development Community. The findings approve the alternative hypothesis (H4a) that the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is significant, and reject the null hypothesis (H40) that the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is significant, and reject the null hypothesis (H40) that the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national air transport service market liberalisation on international revenue passenger load factor of SADC national air transport service market liberalisation on international revenue passenger load factor of SADC national air transport service market liberalisation on international revenue passenger load factor of SADC national air transport service market liberalisation on international revenue passenger load factor of SADC national air transport service market liberalisation on international revenue passenger load factor of SADC national air transport service market liberalisation on international revenue passenger load factor of SADC national air transport service market liberalisation

significant in the Southern African Development Community. The evidence and conclusion on Hypothesis 4 point to the significance of international air transport service market liberalisation in the improvement of international revenue passenger load factor in the Southern African Development Community. The findings emphasise the importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport service market in order to optimally increase international revenue passenger load factor in the Southern African Development Community. Therefore, the research study recommends that states with restrictive international air transport service market regulatory frameworks should review their international air transport service market regulatory regimes in order to foster the improvement of international revenue passenger load factor in the SADC. The research study also recommends that states that experienced some international air transport service market liberalisation initiatives should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to optimally increase international revenue passenger load factor in the SADC. The research study expects the fully liberalised international air transport service market to grant airlines unlimited freedom to access and enter the international air transport service market of their choice. This freedom is expected to facilitate optimal increase of international revenue passenger load factor of SADC national airlines through allowing the airlines to perform as many international revenue passenger kilometers as possible (Cetin & Eryigit, 2018). Therefore, full international air transport service market liberalisation through the Yamoussoukro Decision is expected to optimally increase international revenue passenger load factor of national airlines in the Southern African Development Community.
Research Question 5/Hypothesis 5

The research study recommends that states with restrictive international air transport service market regulatory frameworks should review their international air transport service market regulatory regimes in order to promote the creation of jobs in the travel and tourism industry in the Southern African Development Community. The research study also recommends that states that undertook some international air transport service market liberalisation initiatives should fully liberalise the international air transport market via the Yamoussoukro Decision in order to realise optimal increase of direct jobs in the travel and tourism industry in the SADC.

The evidence and conclusion on Hypothesis 5 are strong enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are necessary in order to optimally increase direct jobs in the travel and tourism industry in the Southern African Development Community. The evidence on Hypothesis 5 indicates that direct jobs in the travel and tourism (T&T) industry in SADC countries with liberal international air transport service markets are significantly 62% times higher than direct jobs in the travel and tourism industry in SADC countries with restrictive international air transport service markets. The findings accept the alternative hypothesis (H5a) that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant, and disapprove the null hypothesis (H50) that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is not significant in the Southern African Development Community. The evidence and conclusion on Hypothesis 5 point to the significance of international air transport service market liberalisation in the promotion of direct jobs in the travel and tourism industry in the Southern African Development Community. The findings on Hypothesis 5 emphasise the

importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport service market in order to optimally increase direct jobs in the travel and tourism industry in the Southern African Development Community. Therefore, the research study recommends that states with restrictive international air transport service market regulatory regimes in the SADC should review their international air transport service market regulatory frameworks in order to promote the creation of direct jobs in the travel and tourism industry in the SADC. The research study also recommends that states that experienced some international air transport service market liberalisation initiatives should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to realise optimal increase of direct jobs in the travel and tourism industry in the SADC.

The research study expects the fully liberalised international air transport service market to grant competitors unlimited freedom to access and enter the international air transport service market. This freedom is expected to facilitate optimal increase of international air passenger demand through fostering the reduction of international passenger airfare and the improvement of international air transport service quality. The research study also expects the fully liberalised international air transport service market to grant airlines unlimited freedom to determine international passenger airfares. This freedom is expected to facilitate optimal increase of international air passenger demand through fostering the reduction of international passenger airfare. The research study expects the optimal increase of international air passenger demand in turn to foster optimal generation of extra direct jobs in the travel and tourism industry in the Southern African Development Community (Cetin & Eryigit, 2018). Therefore, the research study expects full international air transport service market liberalisation through the Yamoussoukro Decision to optimally increase direct jobs in the travel and tourism industry in the Southern African Development Community.

Recommendations for Future Research

The research study recommends full international air transport service market liberalisation through the Yamoussoukro Decision in the Southern African Development Community. Accordingly, the research study derives recommendations for future research on full international air transport service market liberalisation in the SADC. Further research is necessary to inform policymaking about beneficial and defeatist economic impacts of full international air transport service market liberalisation in the Southern African Development Community.

Research Question 1/Hypothesis 1

The research study recommends that the Southern African Development Community should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to optimally increase international air passenger volume. Therefore, the research study recommends that future research on the economic impacts of international air transport service market liberalisation should investigate the actual impact of full international air transport service market liberalisation on international air passenger volume in the Southern African Development Community. The

evidence and conclusion on Hypothesis 1 are strong enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are vital in order to optimally increase international air passenger volume in the Southern African Development Community. The evidence on Hypothesis 1 shows that the international air passenger volume in liberal international air transport service markets is significantly 62% higher than the international air passenger volume in restrictive international air transport service markets

in the Southern African Development Community.

The evidence and conclusion on Hypothesis 1 point to the significance of international air transport service market liberalisation in the promotion of international air passenger volume in the Southern African Development Community. The evidence underscores the importance of developing further international air transport service market liberalisation initiatives that fully liberalise the international air transport service market for optimal increase of international air passenger volume in the SADC. Therefore, the research study recommends that the Southern African Development Community should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to optimally increase international air passenger volume.

However, the existing body of empirical research on the economic impacts of international air transport service market liberalisation is bereft of knowledge on the actual impact of full international air transport service market liberalisation on international air passenger volume in the Southern African Development Community. Therefore, the research study recommends that future research on the economic impacts of international air transport service market liberalisation should examine the actual impact of full international air transport service market liberalisation on international air passenger volume in the Southern African Development Community. Findings of this research study may influence policymakers to invest serious efforts towards full international air transport service market liberalisation through the Yamoussoukro Decision for optimal increase of international air passenger volume in the SADC.

Research Question 2/Hypothesis 2

The research study recommends that the Southern African Development Community should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to optimally reduce international passenger airfare. Accordingly, the research study recommends that future research on the economic impacts of international air transport service market liberalisation should examine the actual impact of full international air transport service market liberalisation on international passenger airfare in the Southern African Development Community.

The evidence and conclusion on Hypothesis 2 are significant enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are necessary in order to optimally reduce international passenger airfare in the Southern African Development Community. The evidence on Hypothesis 2 shows that the international passenger airfare in liberal international air transport service markets is significantly 10 US Cents less than the international passenger airfare in restrictive international air transport service markets in the Southern African Development Community. The evidence and conclusion on Hypothesis 2 imply that international air transport service market liberalisation is significant in the reduction of international passenger airfare in the Southern African Development Community. The findings emphasise the importance of developing further international air transport service market liberalisation reforms that fully liberalise the international air transport service market for optimal reduction of international passenger airfare in the SADC. Therefore, the research study recommends that the Southern African Development Community should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to optimally reduce international passenger airfare.

However, the existing body of empirical research on the economic impacts of international air transport service market liberalisation is bereft of knowledge on the actual impact of full international air transport service market liberalisation on international passenger airfare in the Southern African Development Community. Therefore, the research study recommends that future research on the economic impacts of international air transport service market liberalisation should examine the actual impact of full international air transport service market liberalisation on international passenger airfare in the Southern African Development Community. Findings of this research study may influence policymakers to invest serious efforts towards full international air transport service market liberalisation for optimal reduction of international passenger airfare in the SADC.

Research Question 3/Hypothesis 3

The research study recommends that the Southern African Development Community should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to optimally increase international passenger departure frequency. Therefore, the research study recommends that future research on the economic impacts of international air transport service market liberalisation should study the actual impact of full international air transport service market liberalisation on international passenger departure frequency in the Southern African Development Community.

The evidence and conclusion on Hypothesis 3 are significant enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport markets are vital in order to optimally increase international passenger departure frequency in the Southern African Development Community. The evidence on Hypothesis 3 shows that the international passenger departure frequency in liberal international air transport service markets is significantly 51% higher than the international passenger departure frequency in the Southern African Development community.

Development Community.

evidence and conclusion on Hypothesis 3 suggest the significance of international air transport service market liberalisation in the improvement of international passenger departure frequency in the Southern African Development Community. The findings stress the importance of developing further international air transport service market regulatory reforms that fully liberalise the international air transport service market in order to optimally increase international passenger departure frequency in the SADC. Therefore, the research study recommends that the SADC should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to optimally increase international passenger departure frequency in the SADC.

body of empirical research on the economic impacts of international air transport service market liberalisation is deficient of knowledge on the actual impact of full international air transport service market liberalisation on international passenger departure frequency in the Southern African Development Community. Therefore, the research study recommends that future research on the economic impacts of international air transport service market liberalisation should investigate the actual impact of full international air transport service market liberalisation on international passenger departure frequency in the Southern African Development Community. Findings of this research may influence policymakers to invest serious efforts towards full international air transport service market liberalisation for optimal increase of international passenger departure frequency in the SADC.

Research Question 4/Hypothesis 4

The research study recommends that the Southern African Development Community should fully liberalise the international air transport service market through the Yamoussoukro

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Decision in order to optimally increase international revenue passenger load factor. Accordingly, the research study recommends that future research on the economic impacts of international air transport service market liberalisation should investigate the actual impact of full international air transport service market liberalisation on international revenue passenger load factor in the Southern African Development Community.

The evidence and conclusion on Hypothesis 4 are significant enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are necessary in order to optimally increase international revenue passenger load factor in the Southern African Development Community. The evidence on Hypothesis 4 shows that the international revenue passenger load factor of SADC national airlines in liberal international air transport service markets is significantly 53% higher than the international revenue passenger load factor of SADC national airlines air transport service markets in the Southern African Development Community.

The evidence and conclusion on Hypothesis 4 point to the significance of international air transport service market liberalisation in the promotion of international revenue passenger load factor in the Southern African Development Community. The findings emphasise the importance of developing further international air transport service market regulatory reforms that fully liberalise the international air transport service market in order to optimally increase international revenue passenger load factor in the Southern African Development Community. Therefore, the research study recommends that the SADC should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to optimally increase international revenue passenger load factor in the Southern African Development Community.

Nevertheless, the existing body of research on the economic impacts of international air

transport service market liberalisation is deficient of knowledge on the actual impact of full international air transport service market liberalisation on international revenue passenger load factor in the Southern African Development Community. Therefore, the research study recommends that future research on the economic impacts of international air transport service market liberalisation should investigate the actual impact of full international air transport service market liberalisation on international revenue passenger load factor in the Southern African Development Community. Findings of this research may influence policymakers to invest serious efforts towards full international air transport service market liberalisation through the Yamoussoukro Decision for optimal increase of international revenue passenger load factor in the SADC.

Research Question 5/Hypothesis 5

The research study recommends that the Southern African Development Community should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to optimally increase direct jobs in the travel and tourism industry in the SADC. Therefore, the research study recommends that future research on the economic impacts of international air transport service market liberalisation should examine the actual impact of full international air transport service market liberalisation on direct jobs in the travel and tourism industry in the Southern African Development Community. The

evidence and conclusion on Hypothesis 5 are strong enough to imply that further international air transport service market liberalisation initiatives to fully liberalise the international air transport market are vital in order to optimally increase direct jobs in the travel and tourism industry in the Southern African Development Community. The evidence on Hypothesis 5 indicates that direct jobs in the travel and tourism industry in SADC countries with liberal international air transport

service markets are significantly 62% times higher than direct jobs in the travel and tourism industry in SADC countries with restrictive international air transport service markets.

The evidence and conclusion

on Hypothesis 5 point to the significance of international air transport service market liberalisation in the promotion of direct jobs in the travel and tourism industry in the Southern African Development Community. The findings on Hypothesis 5 emphasise the importance of developing further international air transport service market regulatory reforms that fully liberalise the international air transport service market in order to optimally promote direct jobs in the travel and tourism industry in the Southern African Development Community. Therefore, the research study recommends that the SADC should fully liberalise the international air transport service market through the Yamoussoukro Decision in order to optimally increase direct jobs in the travel and tourism industry in the Southern African Development Community.

Nonetheless, the existing body of research on the economic impacts of international air transport service market liberalisation is bereft of knowledge on the actual impact of full international air transport service market liberalisation on direct jobs in the travel and tourism industry in the Southern African Development Community. Therefore, the research study recommends that future research on the economic impacts of international air transport service market liberalisation should examine the actual impact of full international air transport service market liberalisation on direct jobs in the travel and tourism industry in the Southern African Development Community. Findings of this research may influence policymakers to invest serious efforts towards full international air transport service market liberalisation through the Yamoussoukro Decision for optimal increase of direct jobs in the travel and tourism industry in the SADC.

Conclusions

This research study investigates the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The Southern African Development Community is an emerging economy whose membership currently comprises 16 states including Angola, Botswana, Comoros Islands, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia, and Zimbabwe (InterVISTAS, 2014; Moyo, 2020; Myburgh et al., 2006; Schlumberger, 2009; SADC, 2018). It is characterised by substandard air transport technological infrastructure and underdeveloped air network connectivity. The international air transport service industry is characterised by low standard of growth and development, and state-owned international air transport service operations and low standard national airlines still characterise international air transport services. Some major national airlines in the SADC include the South African Airways, TAAG Angolan Airlines, LAM Mozambican Airlines, Air Namibia, Air Zimbabwe, Air Botswana, Air Tanzania, and Air Mauritius (Bofinger, 2017; Moyo, 2020; Muvingi, 2012; SADC, 2018). The research

study has been prompted by the persistent poor economic performance of the international air transport service in the Southern African Development Community. The economic performance of the international air transport service continues to be poor despite some governments undertaking some international air transport service market liberalisation initiatives through the Yamoussoukro Decision. However, the main challenge has been lack of adequate knowledge on the significance of the magnitudes and the statistics of the economic impacts of international air transport service market liberalisation on the international air transport service in the SADC. The

purpose of this quantitative research study, therefore, is to establish the significance of the magnitudes and the statistics of the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. This research study is an effort to

understand the actual economic impacts of international air transport service market liberalisation from an empirical standpoint and not simply from a unique theoretical standpoint. The research study informs policymakers about the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. Knowledge of the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service may influence the policymakers to fully liberalise international air transport service markets through the Yamoussoukro Decision in the Southern African Development Community. This research study also informs the international air transport service industry. The knowledge may help the international air transport service industry to capitalise on the benefits of international air transport service market liberalisation in the SADC. The research study informs international organisations, development partners, and the donor community and, therefore, may stimulate funding for full international air transport service market liberalisation initiatives in the SADC. Knowledge on the significance of actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community, a region where the topic is understudied, contributes to the existing body of research on the topic.

The research question is interested to know the significance of the actual impacts of international air transport service market liberalisation on the demand and supply side variables of

the international air transport service namely international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor. The research question is keen know how significant the actual impact of international air transport service market liberalisation on international air passenger volume is in the Southern African Development Community. The null hypothesis is that the actual impact of international air transport service market liberalisation on international air passenger volume is not significant, while the alternative hypothesis is that the actual impact of international air transport service market liberalisation on international air passenger volume is not service market liberalisation on international air transport service market hypothesis is that the actual impact of international air transport service market liberalisation on international air passenger volume is not significant, while the alternative hypothesis is that the actual impact of international air transport service market liberalisation on international air passenger volume is significant in the Southern African Development Community. The research

question is also keen to know how significant the actual impact of international air transport service market liberalisation on international passenger airfare is in the Southern African Development Community. The null hypothesis is that the actual impact of international air transport service market liberalisation on international passenger airfare is not significant, while the alternative hypothesis is that the actual impact of international air transport service market liberalisation on international passenger airfare is significant in the Southern African Development Community.

The research question is interested to

know how significant the actual impact of international air transport service market liberalisation on international passenger departure frequency is in the Southern African Development Community. The null hypothesis is that the actual impact of international air transport service market liberalisation on international passenger departure frequency is not significant, while the alternative hypothesis is that the actual impact of international air transport service market liberalisation on international passenger departure frequency is significant in the Southern African Development Community. The research question is also interested to know how significant the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is in the Southern African Development Community. The null hypothesis is that the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is not significant, while the alternative hypothesis is that the actual impact of international air transport service market liberalisation on international revenue passenger load factor of SADC national airlines is significant in the Southern African Development Community.

The research question is also keen to know how significant the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is in the Southern African Development Community. The null hypothesis is of the view that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is not significant, while the alternative hypothesis is of the view that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant in the Southern African Development Community. The capitalism economic worldview supports the statement of the research problem, the statement of the research purpose, the research questions and the research hypotheses and, therefore, forms the theoretical framework of the research study. The capitalism economic worldview advocates market liberalisation to foster the reduction of market price through granting businesses the freedom to determine market prices. The capitalism economic worldview champions market liberalisation to facilitate the improvement of service quality through granting competitors access and entry into the market. The capitalism economic worldview also advocates market liberalisation to promote demand through facilitating the reduction of market price and improvement of service quality. The capitalism economic worldview also champions market liberalisation to foster the creation of jobs

in industries through promoting demand (Duncan & Schimpfössl, 2019; Gudmundsson, 2011; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009; Soskice & Hall, 2001). Relevant empirical literature on the economic impacts of international air transport service market liberalisation argues that international air transport service market liberalisation provides a significant range of benefits inter alia enhanced

international air passenger volume, reduced international passenger airfare, increased international passenger departure frequency, increased international revenue passenger load factor, and generation of employment in the international air transport service sector and related industries (Abate, 2013; Brattle Group, 2002; Fu et al., 2010; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Piermartini & Fache Rousová, 2008). Although there are some theoretical studies that suggest that international air transport service market liberalisation may generate negative effects, there are scarcely any empirical research studies that prove the validity of these claims (Card & Saunders, 1998; Carstensen, 1989; Gaspari, 2011; Goetz & Dempsey, 1988; Goetz & Vowles, 2009; Savage,

1999). The research study considers the quantitative approach as appropriate to guide the statistical estimation of the economic impacts of international air transport service market liberalisation. The study considers the cross-sectional approach as appropriate for the evaluation of the economic impacts of international air transport service market liberalisation. The cross-sectional approach is appropriate where the impacts of changes in a policy can be segregated, and where traffic data between members of a country-pair are available (Eyisi, 2016; Goundar, 2012; Grančay, 2009; InterVISTAS, 2006, 2015; Queirós et al., 2017; Rahman, 2020). The research study employs econometric models by InterVISTAS (2006, 2015), Myburgh et al. (2006), Abate (2013), and Abate and Christidis (2017, 2020) respectively to estimate the impacts of international air transport service market liberalisation on international air passenger volume, international

passenger airfare, international passenger departure frequency, and international revenue passenger load factor in the SADC. The research study considers the secondary data analysis design as an appropriate strategy. The secondary data analysis design is a flexible and robust research design where the researcher does not have to dedicate vast amounts of energy, finances, time, and other resources for the data collection phase because someone else has already collected the data (Cohen et al., 2017; Creswell & Creswell, 2017; Ingham-Broomfield, 2014).

The research

study defines the population and sample of country-pairs under investigation. The country-pairs generate cross-sectional data on international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor and other relevant variables (see Appendices E-F). The research study defines the population as all country-pairs with signed bilateral air service agreements in the Southern African Development Community. The study identifies a population of 49 country-pairs with signed bilateral air service agreements in the SADC (see Appendices B and D). The research study defines the sample of country-pairs under investigation as country-pairs with operational signed bilateral air service agreements in the SADC. The research study considers non-probability sampling as an appropriate sampling procedure. Among non-probability sampling techniques, the research study considers total population purposive sampling technique as an appropriate nonprobability sampling technique for identifying the sample of country-pairs with operational signed bilateral air service agreements. The idea behind is to identify the entire population of countrypairs with operational signed bilateral air service agreements from the population of 49 countrypairs with signed bilateral air service agreements. The research study identifies the total population sample of 38 country-pairs with operational signed bilateral air service agreements in the SADC. The research study employs the cross-sectional approach for evaluating the impacts of international air transport service market liberalisation. However, this approach depends on comparing the impacts of liberal international air transport markets to the impacts of restrictive international air transport markets (InterVISTAS, 2006, 2015). Therefore, the research study identifies 21 liberal international air transport service markets, and 17 restrictive international air transport service markets in the country-pairs with operational signed bilateral air service agreements in the SADC employing the total population sampling technique (see Appendix E7).

The research study also defines the population and sample of secondary data sources for data collection. Secondary data sources are the reservoirs from which cross-sectional data generated by the country-pairs may be collected. The population is all non-published and published electronic and printed secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community, while the sample is published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements in the Southern African Development Community. Published and non-published electronic secondary data sources for open access such as e-books, e-journals, e-magazines/newspapers, and e-documents are available for free access in the public domain. Among non-probability sampling techniques namely snowball sampling, convenience sampling, incidental sampling, and purposive sampling, the research study considers convenience sampling technique for identifying the sample of published and non-published electronic secondary sources of data on the research variables in country-pairs with operational signed bilateral air service agreements (Manna & Mete, 2021; Pandey & Pandey, 2015). The research study employs the Internet and electronic libraries to access published and non-published electronic secondary data sources such

as e-books, e-journals, e-magazines/newspapers and e-documents. Civil aviation authorities in the SADC establish private electronic libraries that provide access to non-published and published electronic data sources. The research study considers data triangulation as an appropriate approach to enhancing trustworthiness, reliability and validity of the research results. Data triangulation is appropriate for secondary data analysis (Heale & Forbes, 2013; Manna & Mete, 2021; Olsen, 2004; Pandey & Pandey, 2015).

Results

The data collection exercise produces Multivariable Dataset 1 for Hypothesis 1 (see summary in Appendix F1), Multivariable Dataset 2 for Hypothesis 2 (see summary in Appendix F2), Multivariable Dataset 3 for Hypothesis 3 (see summary in Appendix F3), and Multivariable Dataset 4 for Hypothesis 4 (see summary in Appendix F4).

The research study applies multiple linear regression analysis to estimate the magnitudes and the statistics of the economic impacts of international air transport service market liberalisation. Multiple linear regression fits a multivariable econometric model into a multivariable dataset to estimate a multivariable regression model. It is able to identify the independent effect of a set of independent variables on a given dependent variable (Schelter et al., 2006; Wooldridge, 2015). The research study also considers the statistical package for social science (SPSS) as an appropriate device. The SPSS is a suitable tool for cross-sectional multiple linear regression analysis (Arkkelin, 2014). Thus, multiple linear regression analysis produces results for the respective questions/hypotheses as presented in Figures 3-22 and Tables 1-20.

Findings

The findings on Hypothesis 1 show that the international air passenger volume in liberal international air transport service markets is significantly 62% on average higher than the international air passenger volume in restrictive international air transport service markets in the Southern African Development Community. These findings support the alternative hypothesis that the actual impact of international air transport service market liberalisation on international air passenger volume is significant, and reject the null hypothesis that the actual impact of international air transport service market liberalisation on international air passenger volume is not significant in the Southern African Development Community.

The findings on Hypothesis 2 show that the international passenger airfare in liberal international air transport service markets is significantly 10 US Cents on average less than the international passenger airfare in restrictive international air transport service markets in the Southern African Development Community. These findings support the alternative hypothesis that the actual impact of international air transport service market liberalisation on international passenger airfare is significant, and reject the null hypothesis that the actual impact of international air transport service market liberalisation on international passenger airfare is not significant in the Southern African Development Community. The findings on Hypothesis 3 indicate that the international passenger departure frequency in liberal international air transport service markets is significantly 51% on average higher than the international passenger departure frequency in restrictive international air transport service markets in the Southern African Development Community. These findings confirm the alternative hypothesis that the actual impact of international air transport service market liberalisation on international passenger departure frequency is significant, and reject the null hypothesis that the actual impact of international air transport service market liberalisation on international passenger departure frequency is not significant in the Southern African Development Community.

The findings on Hypothesis 4 indicate that the international revenue passenger load factor of SADC national airlines in liberal international air transport service markets is significantly 53% on average higher than the international revenue passenger load factor of SADC national airlines in restrictive international air transport service markets in the Southern African Development Community. These findings confirm the alternative hypothesis that the actual impact of international air transport service market liberalisation on international revenue passenger load factor is significant, and reject the null hypothesis that the actual impact of international air transport service market liberalisation on international revenue passenger load factor is not significant in the Southern African Development Community.

The findings on Hypothesis 5 show that direct jobs in the travel and tourism industry in SADC countries with liberal international air transport service markets are significantly 62% times on average higher than direct jobs in the travel and tourism industry in SADC countries with restrictive international air transport service markets. These findings accept the alternative hypothesis that the direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant, and disapprove the null hypothesis that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is not significant in the Southern African Development Community.

Limitations

Limitations that may degrade the quality of results are inevitable in research. Some sources of limitations in the current research study may include the sampling approach, the secondary data, and the econometric models. The identification of a sampling approach is an important

component of a research process. The research study identifies purposive and convenience nonprobability sampling techniques as appropriate. Both the purposive and convenience nonprobability sampling techniques may limit generalisability of the findings (Cohen et al., 2017; Creswell & Creswell, 2017; Zikmund et al., 2013). The research study solely relies on secondary data analysis design where multiple regression analysis is employed to statistically analyse the economic impacts of international air transport service market liberalisation in the Southern African Development Community. Use of secondary data may lack representativity due to poor quality and biases in favour of the primary collector of the statistical data (Cohen et al., 2017; Creswell & Creswell, 2017). The research study employs econometric models to estimate the economic impacts of international air transport service market liberalisation on the international air transport service in the SADC. The research study identifies econometric models by InterVISTAS (2006, 2015), Myburgh et al. (2006), Abate (2013), and Abate and Christidis (2017, 2020) to estimate the impacts of international air transport service market liberalisation on the demand and supply side variables including international passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor. However, the econometric models by Myburgh et al. (2006) and Abate (2013) might overestimate or underestimate their respective results as they rely on fitted values of international air passenger volumes generated by the regression of Multivariable Econometric Model 1 for Hypothesis 1.

Response to the Research Problem and Purpose

The research study addresses the research problem and purpose. The problem is the persistent poor economic performance of the international air transport service in the Southern African Development Community. The economic performance of the international air transport

service continues to be poor in spite of some economies undertaking some international air transport service market liberalisation initiatives through the Yamoussoukro Decision in the Southern African Development Community. However, the main challenge has been lack of adequate knowledge on the significance of the economic impacts of international air transport service market liberalisation on the international air transport service in the SADC. The purpose of this quantitative research study, therefore, is to establish the significance of the actual economic impacts of international air transport service in the SADC. The service in the Southern African Development Community. The research study successfully establishes that the economic impacts of international air transport service market liberalisation on the international air transport service market liberalisation on the international air transport service market liberalisation on the international air transport service in the Southern African Development Community. The research study successfully establishes that the economic impacts of international air transport service market liberalisation on the international air transport service are significant in the Southern African Development Community.

Findings and the Existing Literature

The evidence provided by the findings on Hypothesis 1 is consistent with the capitalism economic theory. The evidence on Hypothesis 1 shows that international air transport service market liberalisation promotes international air passenger demand. The capitalism economic theory believes that market liberalisation promotes demand through fostering the reduction of market price and the improvement of service quality (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009). The evidence on Hypothesis 1 is also consistent with the existing body of research on the economic impacts of international air transport service market liberalisation. The existing body of research believes that international air transport service market liberalisation promotes international air passenger demand through fostering the reduction of international air transport service market liberalisation promotes international air passenger demand through fostering the reduction of international air transport service market liberalisation promotes international air passenger demand through fostering the reduction of international air transport service market liberalisation promotes international air passenger demand through fostering the reduction of international passenger airfare and the improvement of international air

transport service quality (Abate, 2013; Brattle Group, 2002; Fu et al., 2010; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Piermartini & Fache Rousová, 2008). The evidence on Hypothesis 2 is consistent with the capitalism economic theory. The evidence on Hypothesis 2 shows that international air transport service market liberalisation fosters the reduction of international passenger airfare. The capitalism economic worldview advocates market liberalisation to foster the reduction of market price. The capitalism economic theory believes that market liberalisation fosters the reduction of market price through granting businesses the freedom to determine market prices (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009). The evidence on Hypothesis 2 is also consistent with the existing body of research on the economic impacts of international air transport service market liberalisation. The existing body of research believes that international air transport service market liberalisation fosters the reduction of airfare through promoting competition in international passenger airfares (Adler et al., 2014; Gleave, 2014; Goetz & Vowles, 2009; Grančay, 2010; Hammond & Czaban, 2018; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Mattos & Fregnani, 2016; Myburgh et al., 2006; Peterson & Graham, 2008).

The evidence on Hypothesis 3 aligns with the capitalism economic theory. The evidence on Hypothesis 3 indicates that international air transport service market liberalisation fosters the improvement of international passenger departure frequency. The capitalism economic worldview champions market liberalisation to facilitate the improvement of service quality. The capitalism economic theory believes that market liberalisation fosters the improvement of service quality through granting competitors access and entry into the market (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009). The evidence on Hypothesis 3 is also consistent with the existing

body of research on the economic impacts of international air transport service market liberalisation. The existing body of research believes that international air transport service market liberalisation fosters the improvement of international passenger departure frequency through promoting competition in international passenger departure frequencies (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Tolcha & Eric, 2020).

The evidence on Hypothesis 4 agrees with the capitalism economic theory. The evidence on Hypothesis 4 indicates that international air transport service market liberalisation promotes international revenue passenger load factor. The capitalism economic theory advocates market liberalisation to promote load factor. The capitalism economic theory believes that market liberalisation promotes load factor through facilitating capacity utilisation (Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009). The evidence on Hypothesis 4 also agrees with the existing body of research on the economic impacts of international air transport service market liberalisation. The existing body of research believes that international air transport service market liberalisation promotes international revenue passenger load factor through enhancing international revenue passenger kilometers (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2017; Tolcha & Eric, 2020).

The evidence on Hypothesis 5 agrees with the capitalism economic theory. The evidence on Hypothesis 5 shows that international air transport service market liberalisation fosters the creation of employment in the travel and tourism industry. The capitalism economic theory advocates market liberalisation to foster the creation of employment. The capitalism economic worldview believes that market liberalisation fosters the creation of employment in industries through promoting demand (Burghouwt et al., 2015; Duncan & Schimpfössl, 2019; Hall & Soskice 2001; Myburgh et al., 2006; Naz, 2014; Pucheta-Martínez et al., 2020; Scott, 2006; Shaikh, 2009).

The evidence on Hypothesis 5 also agrees with the existing body of research on the economic impacts of international air transport service market liberalisation. The existing body of research believes that international air transport service market liberalisation fosters the creation of jobs in the international air transport service sector and related industries through promoting international air passenger demand (Abate, 2013; Burghouwt et al., 2015; InterVISTAS, 2006, 2009, 2014, 2015, 2017; Myburgh et al., 2006). ., 2006).

Contribution to Knowledge

The research study establishes that the actual economic impacts of international air transport service market liberalisation on the international air transport service are significant in the Southern African Development Community. Specifically, the study establishes that the actual impacts of international air transport service market liberalisation on the demand and supply side variables of the international air transport service, namely international air passenger volume, international passenger airfare, international passenger departure frequency, and international revenue passenger load factor, are significant in the Southern African Development Community. The research study further establishes that the actual direct impact of international air transport service market liberalisation on jobs in the travel and tourism industry is significant in the Southern African Development Community. The knowledge on the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community, an emerging economy where the topic is relatively underresearched, contributes to the existing body of knowledge on the topic. Research that shows how international air transport service market liberalisation benefits the international air transport service sector and the wider economy in an emerging economy such as the Southern African Development Community is helpful to the general public and the research world. The

research study establishes the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service basing on evidence over the period 2011-2015. However, past evidence that supports international air transport service market liberalisation may be obsolete. The significance of the actual economic benefits of international air transport service market liberalisation may have been exhausted, or the actual economic impacts of international air transport service market liberalisation on the international air transport service may have become defeatist for the international air transport service and, therefore, already implemented and/or further liberalisation initiatives may be destructive for the international air transport service in the SADC. Therefore, my further research study needs to update evidence on the significance of the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community. To estimate the actual economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community, the research study borrows econometric models developed by other researchers including InterVISTAS (2006, 2015), Myburgh et al. (2006), Abate (2013), and Abate and Christidis (2017, 2020). Some econometric models were developed for specific regions other than the Southern African Development Community and, therefore, might not include influential covariates for the SADC. Therefore, my next research study on the economic impacts of international air transport service market liberalisation on the international air transport service in the Southern African Development Community needs to develop econometric models that will ensure inclusion of relevant and sufficient covariates for the SADC region.

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APPENDICES

Appendix A

SADC Member States as of 2015



Note. Reprinted from "Restructuring air transport to meet the needs of the Southern African development community," by O. Muvingi, 2012, p. 3 (https://dspace.lib.cranfield.ac.uk/bitstream/handle/1826/7915/Onai_Muvingi_Thesis_2012.pdf? sequence=1&isAllowed=y).

Appendix B

Appendix B1

SADC Air Connectivity as of 2015



Note. Reprinted from "Restructuring air transport to meet the needs of the Southern African development community," by O. Muvingi, 2012, p. 3 (https://dspace.lib.cranfield.ac.uk/bitstream/handle/1826/7915/Onai_Muvingi_Thesis_2012.pdf? sequence=1&isAllowed=y).

Appendix B2

Observation	Country-pair	Number of
		Operators
1	AGO-COD	1
2	AGO-MOZ	1
3	AGO-NAM	2
4	AGO-ZMB	1
5	AGO-ZWE	1
6	BWA-MWI	0
7	BWA-NAM	2
8	BWA-TZA	0
9	BWA-ZMB	1
10	BWA-ZWE	1
11	COD-ZMB	2
12	ZAF-AGO	2
13	ZAF-BWA	3
14	ZAF-COD	2
15	ZAF-LSO	1
16	ZAF-MDG	2
17	ZAF-MWI	2
18	ZAF-MOZ	4
19	ZAF-MUS	3
20	ZAF-NAM	4

SADC Country-pairs with Signed Bilateral Air Service Agreements as of 2015

21	ZAF-SWZ	1

- 22 ZAF-SYC 1
- 23 ZAF-TZA 2
- 24 ZAF-ZMB 4
- 25 ZAF-ZWE 4
- 26 LSO-MWI 0
- 27 LSO-MOZ 0
- 28 LSO-SYC 0
- 29 LSO-ZMB 0
- 30 MDG-MWI 0
- 31 MDG-MUS 2
- 32 MDG-SYC 2
- 33 MWI-MOZ 1
- 34 MWI-TZA 2
- 35 MWI-ZMB 3
- 36 MWI-ZWE 2
- 37 MOZ-SWZ 0
- 38 MOZ-TZA 1
- 39 MOZ-ZWE 1
- 40 MUS-SYC 1
- 41 MUS-ZMB 0
- 42 SWZ-MWI 0
- 43 TZA-BWA 0

44

TZA-SYC 1

45	TZA-ZMB	1
46	TZA-ZWE	1
47	ZMB-NAM	1
48	ZMB-ZWE	3
49	ZWE-NAM	2

Note.Adaptedfrom "BilateralAgreementandTrafficforAngola,"byICAO,2017(https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_GK7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeetings%2Faircargoafrica2017%2FCountry%2520Profiles%2FAngola.pdf&usg=AOvVaw2ynCL14SfGbD0XwhL97M9J);"BilateralAgreementandTrafficforBotswana,"byICAO,2017(https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_GK7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeetings%2Faircargoafrica2017%2FCountry%2520Profiles%2FBotswana.pdf&usg=AOvVaw2ynCL14SfGbD0XwhL97M9J);"BilateralAgreementandTrafficforDemocraticRepublicofCongo,"byICAO,2017(https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ve

(https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ve d=2ahUKEwjshM3dmo36AhW4RkEAHZz3A7MQFnoECAUQAQ&url=https%3A%2F%2Fw ww.icao.int%2FMeetings%2Faircargoafrica2017%2FCountry%2520Profiles%2FDemocratic%2 520Republic%2520of%2520Congo.pdf&usg=AOvVaw3L4XTr_rYuLfhXCStgxtCv); "Bilateral Agreement and Traffic for Lesotho," by ICAO, 2017 (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_G K7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeet ings%2Faircargoafrica2017%2FCountry%2520Profiles%2FLesotho.pdf&usg=AOvVaw2ynCL1 4SfGbD0XwhL97M9J); "Bilateral Agreement and Traffic for Madagascar," by ICAO, 2017 (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_G K7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeet ings%2Faircargoafrica2017%2FCountry%2520Profiles%2FMadagascar.pdf&usg=AOvVaw2yn CL14SfGbD0XwhL97M9J); "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017 (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_G K7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeet ings%2Faircargoafrica2017%2FCountry%2520Profiles%2FMalawi.pdf&usg=AOvVaw2ynCL1 4SfGbD0XwhL97M9J); "Bilateral Agreement and Traffic for Mauritius," by ICAO, 2017 (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_G K7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeet ings%2Faircargoafrica2017%2FCountry%2520Profiles%2FMauritius.pdf&usg=AOvVaw2ynCL 14SfGbD0XwhL97M9J); "Bilateral Agreement and Traffic for Mozambique," by ICAO, 2017 (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_G K7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeet ings%2Faircargoafrica2017%2FCountry%2520Profiles%2FMozambique.pdf&usg=AOvVaw2y nCL14SfGbD0XwhL97M9J); "Bilateral Agreement and Traffic for Namibia," by ICAO, 2017 (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_G K7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeet ings%2Faircargoafrica2017%2FCountry%2520Profiles%2FNamibia.pdf&usg=AOvVaw2ynCL1 4SfGbD0XwhL97M9J); "Bilateral Agreement and Traffic for Seychelles," by ICAO, 2017 (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_G K7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeet ings%2Faircargoafrica2017%2FCountry%2520Profiles%2FSeychelles.pdf&usg=AOvVaw2ynC

L14SfGbD0XwhL97M9J); "Bilateral Agreement and Traffic for South Africa," by ICAO, 2017 (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjQpci ElY36AhWylFwKHV8aDDAQFnoECAkQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeeti ngs%2Faircargoafrica2017%2FCountry%2520Profiles%2FSouth%2520Africa.pdf&usg=AOvVa w2iQQ9NwhIZYloSUPtgyzPZ); "Bilateral Agreement and Traffic for Swaziland," by ICAO, 2017

(https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_G K7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeet ings%2Faircargoafrica2017%2FCountry%2520Profiles%2FSwaziland.pdf&usg=AOvVaw2ynC L14SfGbD0XwhL97M9J); "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017 (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj20oX qk436AhUWS8AKHawiBmIQFnoECAYQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeeti ngs%2Faircargoafrica2017%2FCountry%2520Profiles%2FUnited%2520Republic%2520of%252 0Tanzania.pdf&usg=AOvVaw10WhjIbEayS7Hkj26eFrhX); "Bilateral Agreement and Traffic for Zambia," ICAO, 2017 by (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_G K7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeet ings%2Faircargoafrica2017%2FCountry%2520Profiles%2FZambia.pdf&usg=AOvVaw2ynCL1 4SfGbD0XwhL97M9J); "Bilateral Agreement and Traffic for Zimbabwe," by ICAO, 2017 (https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjhv_G K7IX6AhWP2KQKHZheDy0QFnoECAUQAQ&url=https%3A%2F%2Fwww.icao.int%2FMeet ings%2Faircargoafrica2017%2FCountry%2520Profiles%2FZimbabwe.pdf&usg=AOvVaw2ynC L14SfGbD0XwhL97M9J).

Appendix C

Freedoms of the Air (Air Traffic Rights)



Note. Reprinted	from "Restructuring	air	transport to	meet the needs	of the	Southern	African
development	community,"	by	0.	Muvingi,	2012	, p.	14
(https://dspace.lit	o.cranfield.ac.uk/bitst	rear	n/handle/18	26/7915/Onai_Mu	ıvingi_'	Thesis_20	12.pdf?

sequence=1&isAllowed=y).

Appendix D

State	AGO	BWA	COD	LSO	MDG	MWI	MOZ	MUS	NAM	SWZ	SYC	TZA	ZAF	ZMB	ZWE
AGO		0	1	0	0	0	1	0	1	0	0	0	1	1	1
D337 A			0	0	0	1	0	0	1	0	0	1	1	1	1
BWA			0	0	0	1	0	0	1	0	0	1	1	1	1
COD				0	0	0	0	0	0	0	0	0	1	1	0
LSO					0	1	1	0	0	0	1	0	1	1	0
MDG						1	0	1	0	0	1	0	1	0	0
MWI							1	0	0	1	0	1	1	1	1
MOZ								0	0	1	0	1	1	0	1
MUS									0	0	1	0	1	1	0
NAM										0	0	0	1	1	1
SWZ											0	0	1	0	0
SYC												1	1	0	0
TZA													1	1	1
ZAF														1	1
ZMB															1
ZWE															
						0	= Not co	nnected							

Matrix Showing Intra-SADC Air Transport Service Connectivity as of 2015

1 = Connected

Note. Adapted from "Restructuring air transport to meet the needs of the Southern African development community," by O. Muvingi, 2012, p. 59; "Bilateral Agreement and Traffic for Angola," by ICAO, 2017; "Bilateral Agreement and Traffic for Botswana," by ICAO, 2017; "Bilateral Agreement and Traffic for Democratic Republic of Congo," by ICAO, 2017; "Bilateral

Agreement and Traffic for Lesotho," by ICAO, 2017; "Bilateral Agreement and Traffic for Madagascar," by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Mauritius," by ICAO, 2017; "Bilateral Agreement and Traffic for Mozambique," by ICAO, 2017; "Bilateral Agreement and Traffic for Namibia," by ICAO, 2017; "Bilateral Agreement and Traffic for Seychelles," by ICAO, 2017; "Bilateral Agreement and Traffic for South Africa," by ICAO, 2017; "Bilateral Agreement and Traffic for South Africa," by ICAO, 2017; "Bilateral Agreement and Traffic for Swaziland," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2

Appendix E

Datasets

Appendix E1

Populations (Thousands) in SADC States 2011-2015

No	State	2011	2012	2013	2014	2015	Average
1	AGO	23 533	24 292	25 080	25 901	26 681	25 097.4
2	BWA	2 025	2 063	2 101	2 156	2 195	2 108
3	COD	75 259	77 817	80 462	83 197	85 026	80 352.2
4	LSO	1 897	1 901	1 908	1 916	1 924	1 909.2
5	MDG	20.696	21 263	21 842	22,434	23 040	21 855
5	MDC	20 070	21 203	21012	22 131	23 010	21 035
6	MWI	14 389	14 845	15 317	15 805	16 311	15 333.4
7	MUS	1 252	1 256	1 259	1 261	1 263	1 258.2
8	MOZ	23 050	23 701	24 366	25 042	25 728	24 377.4
9	NAM	2 1 1 6	2 155	2 196	2 238	2 281	2 197.2

10	SWZ	1 067	1 080	1 093	1 106	1 119	1 093
11	SYC	87	87	89	91	93	89.4
12	TZA	44 485	44 929	46 356	47 831	49 359	46 592
13	ZAF	52 129	52 930	53 751	54 574	55 407	53 758.2
14	ZMB	13 719	14 145	14 600	15 023	15 474	14 592.2
15	ZWE	12 754	13 062	13 368	13 652	13 944	13 356

Note. Adapted from "SADC Selected Economic and Social Indicators 2019," by the Southern African Development Community (SADC), 2018, p. 6 (https://www.sadc.int/sadc-statistics/sadc-selected-economic-and-social-indicators-2019).

Appendix E2

Total Exports (US\$ millions) in SADC States 2011-2015

No	State	2011	2012	2013	2014	2015	Average
1	AGO	66 427	70 863	67 713	58 672	33 925	59 520
2	BWA	5 320	5 905	7 617	6 452	6 101	5 278.4
3	COD	6 236	5 809	7 701	10 307	10 285	8 067.6
4	LSO	771	976	848	872	917	876.8
5	MDG	1448	1202	1627	2220	2060	1 711.4
6	MWI	1507	1285	1287	1510	1417	1 401.2
7	MOZ	3604	3856	4024	4421	3413	3 863.6
8	MUS	2560	2661	2872	3095	2661	2 760.8
9	NAM	5940	5868	5645	5988	4609	5 610
10	SWZ	2 492	2 135	2 060	2 016	1 823	2 105.2
11	SYC	264	272	374	337	247	298.8

12	TZA	4 802	5 505	5 146	4 498	4 360	4 862.2
13	ZAF	108 915	99 513	96 265	92 282	80 749	95 544.8
14	ZMB	8 829	9 642	10 607	9 687	6 607	9 074.4
15	ZWE	4 528	3 964	3 810	3 682	3 577	3 912.2

Note. Adapted from "SADC Selected Economic and Social Indicators 2019," by the Southern African Development Community (SADC), 2018, p. 18 (https://www.sadc.int/sadc-statistics/sadc-selected-economic-and-social-indicators-2019).

Appendix E3

Total Imports (US\$ millions) in SADC States 2011-2015

No	State	2011	2012	2013	2014	2015	Average
1	AGO	20 791	28 917	27 689	28 580	21 549	25 505.2
2	BWA	6 649	7 988	8 113	6 128	7 039	7 183.4
3	COD	6549	9974	12279	15295	10575	10 934.4
4	LSO	1464	2251	1886	1816	1699	1 823.2
5	MDG	2929	2491	2700	3328	2392	2 768
6	MWI	2426	2334	2810	2688	2212	2 494
7	MOZ	6312	8688	10099	9281	8334	8 542.8
8	MUS	5141	5379	5401	5618	4792	5 266.2
9	NAM	6629	7312	7405	8626	7836	7 561.6
10	SWZ	3111	1986	1942	1746	1519	2 060.8
11	SYC	1006	1020	1078	1145	974	1 044.6
12	TZA	8 578	11 626	12 456	12 690	10 817	11 233.4
13	ZAF	105 538	108 392	108 139	104 807	84 441	102 263.4

14	ZMB	7 280	8 820	10 573	9 795	7 935	8 880.6
15	ZWE	8 596	7 463	7 704	7 453	7 000	7 643.2

Note. Adapted from "SADC Selected Economic and Social Indicators 2019," by the Southern African Development Community (SADC), 2018, p. 19 (https://www.sadc.int/sadc-statistics/sadc-selected-economic-and-social-indicators-2019).

Appendix E4

No	State	Trade (Total Exports + Total Imports)
1	AGO	85 025.2
2	BWA	12 461.8
3	COD	19 002
4	LSO	2 700
5	MDG	4 479.4
6	MWI	3 895.2
7	MOZ	12 406.4
8	MUS	8 027
9	NAM	13 171.6
10	SWZ	4 166
11	SYC	1 343.4
12	TZA	16 095.6
13	ZAF	197 808.2
14	ZMB	17 955
15	ZWE	11 555.4

Total Trade (US\$ millions) in SADC States 2011-2015

Note. Created from Appendix E2 and Appendix E3

Appendix E5

Observation	Country	2011	2012	2013	2014	2015	Average
1	AGO	111 943	128 138	136 725	145 668	116 164	127728
2	BWA	15 438	14 420	14 902	16 251	14 421	15086
3	COD	25 841	29 319	32 676	35 909	37 918	32333
4	LSO	2 621	2 573	2 446	2 501	2 371	2502
5	MDG	11 552	11 579	12 424	12 523	10 371	11690
6	MWI	8 003	5 721	5 222	5 972	6 431	6270
7	MUS	11 517	11 669	12 122	12 804	11 671	11957
8	MOZ	14 385	16 434	17 084	18 099	16 660	16532
9	NAM	12 604	13 017	12 134	11 286	11 891	12186
10	SWZ	4 821	4 893	4 624	4 485	4 076	4580
11	SYC	1019	1 060	1 328	1 343	1 377	1225
12	TZA	34 452	39 643	45 668	49 969	47 522	43451
13	ZAF	416 878	396 811	366 837	351 047	317 638	369842
14	ZMB	23 460	25 528	28 076	27 163	21 274	25100
15	ZWE	14 102	17 115	19 091	19 496	19 963	17953

Gross Domestic Product in SADC at Current Market Prices (US\$ million) 2011-2015

Note. Adapted from "SADC Selected Economic and Social Indicators 2019," by the Southern African Development Community (SADC), 2018, p. 9 (https://www.sadc.int/sadc-statistics/sadc-selected-economic-and-social-indicators-2019).
Appendix E6

Matrix of Great Circle Distances between SADC Countries

State	AGO	BWA	COD	LSO	MDG	MWI	MUS	MOZ	NAM	SYC	SWZ	TZA	ZAF	ZMB	ZWE
100		07(0	5006	2955	1626	2202		2794	1570	(055	2006	2210	2401	1704	0166
AGO		2769	5286	2855	4636	2393	2221	2784	1579	6255	2806	3310	2491	1794	2166
BWA	2769		3073	642	2423	1449	3344	721	1467	4042	593	2571	278	1055	924
COD	5286	3073		3159	4940	4277	5861	3238	3984	6559	3110	5244	2795	3999	3765
002	0200	0010		0107	.,	,,	0001	0200	070.	0007	0110	0211	2770		2700
LSO	2855	642	3159		2509	1846	3430	807	1553	4128	679	2813	364	1568	1334
MDG	4636	2423	4940	2509		3627	1059	2588	3334	2800	2460	4594	2145	3349	3115
MWI	2393	1449	4277	1846	3627		4548	1925	2671	5246	1797	990	1482	599	525
MUS	5557	3344	5861	3430	1059	4548		3509	4255	1741	3381	5515	3066	4270	4036
MOZ	2784	721	3238	807	2588	1925	3509		1632	4207	758	2230	443	1647	1413
NAM	1579	1467	3984	1553	3334	2671	4255	1632		4953	1504	3638	1189	2393	924
SWZ	2806	593	3110	679	2460	1797	3381	758	1504		4079	2764	315	1519	1285
SYC	6255	4042	6559	4128	2800	5246	1741	4207	4953	4079		6213	3764	4968	4734
TZA	3310	2571	5244	2813	4594	990	5515	2230	3638	6213	2764		2449	1516	1515
ZAF	2491	278	2795	364	2145	1482	3066	443	1189	3764	315	2449		1204	970
ZMB	1794	1055	3999	1568	3349	599	4270	1647	2393	4968	1519	1516	1204		397
ZWE	2166	924	3765	1334	3115	525	4036	1413	924	4734	1285	1515	970	397	
Note.	Adapt	ted fro	om "R	lestru	cturing	air t	ranspo	ort to	meet	the n	eeds	of the	Sou	thern	African
Devel	opmer	nt	Com	muni	ty,"	by	7	О.	Μ	uving	i,	2012	2,	p.	64
(https	https://dspace.lib.cranfield.ac.uk/bitstream/handle/1826/7915/Onai_Muvingi_Thesis_2012.pdf?														
seque	sequence=1&isAllowed=y).														

Appendix E7

Observation	Country-pair	Bilateral Indicator	Number of Operators
1	AGO-COD	0	1
2	AGO-MOZ	0	1
3	AGO-NAM	0	2
4	AGO-ZMB	0	1
5	AGO-ZWE	0	1
6	BWA-NAM	0	2
7	BWA-ZMB	0	1
8	BWA-ZWE	1	1
9	COD-ZMB	1	2
10	ZAF-AGO	1	2
11	ZAF-BWA	0	3
12	ZAF-COD	0	2
13	ZAF-LSO	1	1
14	ZAF-MDG	1	2
15	ZAF-MWI	1	2
16	ZAF-MOZ	0	4
17	ZAF-MUS	1	3
18	ZAF-NAM	1	4
19	ZAF-SWZ	1	1
20	ZAF-SYC	0	1
21	ZAF-TZA	1	2

SADC Country-pairs with Operational Signed Bilateral Air Service Agreements as of 2015

22	ZAF-ZMB	1	4
23	ZAF-ZWE	1	4
24	MDG-MUS	1	2
25	MDG-SYC	0	2
26	MWI-MOZ	0	1
27	MWI-TZA	1	2
28	MWI-ZMB	1	3
29	MWI-ZWE	1	2
30	MOZ-TZA	1	1
31	MOZ-ZWE	0	1
32	MUS-SYC	0	1
33	TZA-SYC	1	1
34	TZA-ZMB	1	1
35	TZA-ZWE	0	1
36	ZMB-NAM	1	1
37	ZMB-ZWE	0	3
38	ZWE-NAM	1	2

0 = Restrictive BASA; 1= Liberal BASA

BASA = Bilateral Air Service Agreement

Note. Adapted from "Bilateral Agreement and Traffic for Angola," by ICAO, 2017; "Bilateral Agreement and Traffic for Botswana," by ICAO, 2017; "Bilateral Agreement and Traffic for Democratic Republic of Congo," by ICAO, 2017; "Bilateral Agreement and Traffic for Lesotho," by ICAO, 2017; "Bilateral Agreement and Traffic for Madagascar," by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Mozambique," by ICAO, 2017;

"Bilateral Agreement and Traffic for Namibia," by ICAO, 2017; "Bilateral Agreement and Traffic for Seychelles," by ICAO, 2017; "Bilateral Agreement and Traffic for South Africa," by ICAO, 2017; "Bilateral Agreement and Traffic for Swaziland," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zimbabwe," by ICAO, 2017; "The Air Liberalisation Index as a tool in measuring the impact of South Africa's aviation policy in Africa on air passenger traffic flows," by S. Surovitskikha and B. Lubbeb, 2015, p. 301; "Trade Policy Review," by the Secretariat Zimbabwe, 2020, p. 102; "Opening Up Aviation Services in Africa: Implementing Air Transport Liberalization – Benefits & Opportunities," by S.D. Gleave, 2014, Appendices; "The Status of Bilateral Air Services Agreements Concluded between the Government of the United Republic of Tanzania and the Governments of other Countries,"; "Bilateral Air Service Agreements," by the Civil Aviation Authority of Botswana (CAAB), 2015; "Mauritius," by the International Civil Aviation Organization (ICAO), 2005, p. 128.

Appendix E8

SADC Country-pairs and Average Passenger Airfares (US\$) per Kilometer 2011-2015

No	Country-pair	Passenger Airfare	Great Circle Distance (Km)	Passenger Airfare per Kilometer
1	AGO-COD	1452	5286	.274600
2	AGO-MOZ	1655	2784	.594400
3	AGO-NAM	913	1579	.578200
4	AGO-ZMB	1044	1794	.581700
5	AGO-ZWE	925	2166	.427200
6	BWA-NAM	489	1467	.333100
7	BWA-ZMB	453	1055	.429400

8	BWA-ZWE	415	924	.445900
9	COD-ZMB	740	3999	.185000
10	ZAF-AGO	1105	2491	.443500
11	ZAF-BWA	143	278	.513700
12	ZAF-COD	472	2795	.168900
13	ZAF-LSO	131	364	.359900
14	ZAF-MDG	710	2145	.331000
15	ZAF-MWI	556	1482	.394700
16	ZAF-MOZ	319	443	.721000
17	ZAF-MUS	699	3066	.228000
18	ZAF-NAM	290	1189	.243900
19	ZAF-SWZ	160	315	.507900
20	ZAF-SYC	660	3764	.175300
21	ZAF-TZA	348	2449	.142100
22	ZAF-ZMB	370	1204	.307300
23	ZAF-ZWE	332	970	.342300
24	MDG-MUS	543	1059	.512800
25	MDG-SYC	831	2800	.296800
26	MWI-MOZ	685	1925	.356100
27	MWI-TZA	226	990	.228300
28	MWI-ZMB	277	599	.462400
29	MWI-ZWE	215	525	.409500
30	MOZ-TZA	485	2230	.217500
31	MOZ-ZWE	887	1413	.627700

32	MUS-SYC	888	1741	.510000
33	TZA-SYC	564	6213	.090800
34	TZA-ZMB	492	1516	.324500
35	TZA-ZWE	829	1515	.546900
36	ZMB-NAM	674	2393	.281700
37	ZMB-ZWE	130	397	.326200
38	ZWE-NAM	432	924	.467700

Note. Adapted from SADC national airlines.

Appendix E9

SADC Country-pairs and Air Operators 2011-2015

Observation	Country-pair	Airline	Country of Origin	Number of
				Operators
1	AGO-COD	Hewa Bora Airways	DRC	1
2	AGO-MOZ	LAM Mozambican Airlines	Mozambique	1
3	AGO-NAM	TAAG Angolan Airlines	Angola	2
		Air Namibia	Namibia	
4	AGO-ZMB	TAAG Angolan Airlines	Angola	1
5	AGO-ZWE	TAAG Angolan Airlines	Angola	1
6	BWA-NAM	Air Botswana	Botswana	2
		Air Namibia	Namibia	
7	BWA-ZMB	Air Botswana	Botswana	1
8	BWA-ZWE	Air Botswana	Botswana	1
9	COD-ZMB	Hewa Bora Airways	DRC	2
		Zambezi Airlines	Zambia	

10	ZAF-AGO	South African Airways	South Africa	2
		TAAG Angolan Airlines	Angola	
11	ZAF-BWA	South African Airways	South Africa	3
		South African Express	South Africa	
		Air Botswana	Botswana	
12	ZAF-COD	South African Airways	South Africa	2
		Hewa Bora Airways	DRC	
13	ZAF-LSO	South African Airlink	South Africa	1
14	ZAF-MDG	South African Airlink	South Africa	2
		Air Madagascar	Madagascar	
15	ZAF-MWI	South African Airways	South Africa	2
		Air Malawi	Malawi	
16	ZAF-MOZ	South African Airways	South Africa	4
		LAM Mozambican Airlines	Mozambique	
		TTA	Joint Moz/Airlink	
		South African Airlink	South Africa	
17	ZAF-MUS	South African Airways	South Africa	3
		Air Mauritius	Mauritius	
		Comair	South Africa	
18	ZAF-NAM	South African Airways	South Africa	4
		Air Namibia	Namibia	
		South African Express	South Africa	
		Comair	South Africa	
19	ZAF-SWZ	South African Airlink	South Africa	1

20	ZAF-SYC	Air Seychelles	Seychelles	1
21	ZAF-TZA	South African Airways	South Africa	2
		Comair	South Africa	
22	ZAF-ZMB	South African Airways	South Africa	4
		Air Namibia	Namibia	
		Zambezi Airlines	Zambia	
		South African Airlink	South Africa	
23	ZAF-ZWE	South African Airways	South Africa	4
		Air Zimbabwe	Zimbabwe	
		Comair	South Africa	
		South African Airlink	South Africa	
24	MDG-MUS	Air Madagascar	Madagascar	2
		Air Mauritius	Mauritius	
25	MDG-SYC	Air Madagascar	Madagascar	2
		Air Seychelles	Air Seychelles	
26	MWI-MOZ	Air Malawi	Malawi	1
27	MWI-TZA	Air Malawi	Malawi	2
		Zambezi Airlines	Zambia	
28	MWI-ZMB	Air Malawi	Malawi	3
		Kenya Airways	Kenya	
		Zambezi Airlines	Zambia	
29	MWI-ZWE	Air Malawi	Malawi	2
		Air Zimbabwe	Zimbabwe	
30	MOZ-TZA	LAM Mozambican Airlines	Mozambique	1

31	MOZ-ZWE	Air Zimbabwe	Zimbabwe	1
32	MUS-SYC	Air Seychelles	Seychelles	1
33	TZA-SYC	Air Seychelles	Seychelles	1
34	TZA-ZMB	Zambezi Airlines	Zambia	1
35	TZA-ZWE	Air Zimbabwe	Zimbabwe	1
36	ZMB-NAM	Air Namibia	Namibia	1
37	ZMB-ZWE	Zambezi Airlines	Zambia	3
		Air Zimbabwe	Zimbabwe	
		Ethiopian Airlines	Ethiopia	
38	ZWE-NAM	Air Zimbabwe	Zimbabwe	2
		Air Namibia	Namibia	

Note. Adapted from "Restructuring air transport to meet the needs of the Southern African development community," by O. Muvingi, 2012, p. 252 (https://dspace.lib.cranfield.ac.uk/bitstream/handle/1826/7915/Onai_Muvingi_Thesis_2012.pdf? sequence=1&isAllowed=y).

Appendix E10

SADC Country-pairs and Average Passenger Flights 2011-2015

Observation	Country-pair	International Passenger Flights
1	AGO-COD	105
1	100 000	105
2	AGO-MOZ	105
3	ΔΟΟ ΝΔΜ	728
5	AUO-NAM	726
4	AGO-ZMB	52
F		50
5	AGO-ZWE	52

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- 7 BWA-ZMB 105
- 8 BWA-ZWE 208
- 9 COD-ZMB
- 10 ZAF-AGO 746

354

- 11 ZAF-BWA 5592
- 12 ZAF-COD 931
- 13 ZAF-LSO 1172
- 14 ZAF-MDG 457
- 15 ZAF-MWI 1204
- 16 ZAF-MOZ 5283
- 17 ZAF-MUS 1212
- 17 ZAF-MUS 1212
- 18 ZAF-NAM 5598
- 19 ZAF-SWZ 1820
- 20 ZAF-SYC 159
- 21 ZAF-TZA 1155
- 22 ZAF-ZMB 3960
- 23 ZAF-ZWE 5231
- 24 MDG-MUS 296
- 25 MDG-SYC 130
- 26 MWI-MOZ 385
- 27 MWI-TZA 312
- 28 MWI-ZMB 1263
- 29 MWI-ZWE 316

30	MOZ-TZA	158
31	MOZ-ZWE	38
32	MUS-SYC	196
33	TZA-SYC	104
34	TZA-ZMB	263
35	TZA-ZWE	216
36	ZMB-NAM	103
37	ZMB-ZWE	1318
38	ZWE-NAM	208

Note. Adapted from "Bilateral Agreement and Traffic for Angola," by ICAO, 2017; "Bilateral Agreement and Traffic for Botswana," by ICAO, 2017; "Bilateral Agreement and Traffic for Democratic Republic of Congo," by ICAO, 2017; "Bilateral Agreement and Traffic for Lesotho," by ICAO, 2017; "Bilateral Agreement and Traffic for Madagascar," by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Namibia," by ICAO, 2017; "Bilateral Agreement and Traffic for Namibia," by ICAO, 2017; "Bilateral Agreement and Traffic for Seychelles," by ICAO, 2017; "Bilateral Agreement and Traffic for Swaziland," by ICAO, 2017; "Bilateral Agreement and Traffic for Swaziland," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bi

Appendix E11

Observation	Country-pair	Flights per Operator (Departure Frequency)
1	AGO-COD	39
2	AGO-MOZ	39
3	AGO-NAM	403
4	AGO-ZMB	35
5	AGO-ZWE	52
6	BWA-NAM	35
7	BWA-ZMB	86
8	BWA-ZWE	208
9	COD-ZMB	177
10	ZAF-AGO	338
11	ZAF-BWA	1381
12	ZAF-COD	403
13	ZAF-LSO	1172
14	ZAF-MDG	229
15	ZAF-MWI	602
16	ZAF-MOZ	537
17	ZAF-MUS	404
18	ZAF-NAM	1400
19	ZAF-SWZ	1820
20	ZAF-SYC	148
21	ZAF-TZA	578

SADC Country-pairs and Average Flights per Operator 2011-2015

22	ZAF-ZMB	990
23	ZAF-ZWE	1308
24	MDG-MUS	148
25	MDG-SYC	121
26	MWI-MOZ	350
27	MWI-TZA	156
28	MWI-ZMB	421
29	MWI-ZWE	158
30	MOZ-TZA	158
31	MOZ-ZWE	31
32	MUS-SYC	177
33	TZA-SYC	104
34	TZA-ZMB	263
35	TZA-ZWE	195
36	ZMB-NAM	103
37	ZMB-ZWE	403
38	ZWE-NAM	104

Note. Created from Appendix E9 and Appendix E10

Appendix E12

SADC Country-pairs and Average Passenger Seats 2011-2015

Observation	Country-pair	Passenger Seats	
1	AGO-COD	13530	_
2	AGO-MOZ	10371	

3	AGO-NAM	85099
4	AGO-ZMB	6240
5	AGO-ZWE	6240
6	BWA-NAM	3998
7	BWA-ZMB	5167
8	BWA-ZWE	8756
9	COD-ZMB	23632
10	ZAF-AGO	184307
11	ZAF-BWA	353780
12	ZAF-COD	104998
13	ZAF-LSO	44252
14	ZAF-MDG	43521
15	ZAF-MWI	166318
16	ZAF-MOZ	421509
17	ZAF-MUS	215927
18	ZAF-NAM	526485
19	ZAF-SWZ	48620
20	ZAF-SYC	39542
21	ZAF-TZA	149453
22	ZAF-ZMB	384591
23	ZAF-ZWE	602607
24	MDG-MUS	76612
25	MDG-SYC	17680
26	MWI-MOZ	26030

27	MWI-TZA	25023
28	MWI-ZMB	54419
29	MWI-ZWE	20046
30	MOZ-TZA	19181
31	MOZ-ZWE	345
32	MUS-SYC	30086
33	TZA-SYC	14144
34	TZA-ZMB	36495
35	TZA-ZWE	31320
36	ZMB-NAM	10405
37	ZMB-ZWE	244662
38	ZWE-NAM	14593

Note. Adapted from "Bilateral Agreement and Traffic for Angola," by ICAO, 2017; "Bilateral Agreement and Traffic for Botswana," by ICAO, 2017; "Bilateral Agreement and Traffic for Democratic Republic of Congo," by ICAO, 2017; "Bilateral Agreement and Traffic for Lesotho," by ICAO, 2017; "Bilateral Agreement and Traffic for Malagascar," by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Malawi" by ICAO, 2017; "Bilateral Agreement and Traffic for Namibia," by ICAO, 2017; "Bilateral Agreement and Traffic for Namibia," by ICAO, 2017; "Bilateral Agreement and Traffic for Seychelles," by ICAO, 2017; "Bilateral Agreement and Traffic for Swaziland," by ICAO, 2017; "Bilateral Agreement and Traffic for Swaziland," by ICAO, 2017; "Bilateral Agreement and Traffic for Swaziland," by ICAO, 2017; "Bilateral Agreement and Traffic for Swaziland," by ICAO, 2017; "Bilateral Agreement and Traffic for Tanzania," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Traffic for Zambia," by ICAO, 2017; "Bilateral Agreement and Tra

Appendix E13

Observation	Country-pair	Passenger Seats per Flight (Aircraft Size)
1	AGO-COD	129
2	AGO-MOZ	99
3	AGO-NAM	234
4	AGO-ZMB	120
5	AGO-ZWE	120
6	BWA-NAM	77
7	BWA-ZMB	49
8	BWA-ZWE	42
9	COD-ZMB	134
10	ZAF-AGO	494
11	ZAF-BWA	190
12	ZAF-COD	225
13	ZAF-LSO	38
14	ZAF-MDG	190
15	ZAF-MWI	276
16	ZAF-MOZ	319
17	ZAF-MUS	534
18	ZAF-NAM	376
19	ZAF-SWZ	27
20	ZAF-SYC	249
21	ZAF-TZA	259

SADC Country-pairs and Average Passenger Seats per Flight (Aircraft Size) 2011-2015

22	ZAF-ZMB	388
23	ZAF-ZWE	461
24	MDG-MUS	518
25	MDG-SYC	272
26	MWI-MOZ	68
27	MWI-TZA	160
28	MWI-ZMB	129
29	MWI-ZWE	127
30	MOZ-TZA	121
31	MOZ-ZWE	9
32	MUS-SYC	154
33	TZA-SYC	136
34	TZA-ZMB	139
35	TZA-ZWE	145
36	ZMB-NAM	101
37	ZMB-ZWE	557
38	ZWE-NAM	140

Note. Created from Appendix E10 and Appendix E12

Appendix E14

SADC Country-pairs and Average Revenue Passenger Volumes 2011-2015

Observation	Country-pair	Revenue Passenger Volume
1	AGO-COD	9471
2	AGO-MOZ	2671

3	AGO-NAM	161927
4	AGO-ZMB	11874
5	AGO-ZWE	11874
6	BWA-NAM	2799
7	BWA-ZMB	490
8	BWA-ZWE	16661
9	COD-ZMB	16542
10	ZAF-AGO	129015
11	ZAF-BWA	247646
12	ZAF-COD	73499
13	ZAF-LSO	30976
14	ZAF-MDG	30465
15	ZAF-MWI	116423
16	ZAF-MOZ	295056
17	ZAF-MUS	151149
18	ZAF-NAM	368540
19	ZAF-SWZ	34034
20	ZAF-SYC	27679
21	ZAF-TZA	104617
22	ZAF-ZMB	269214
23	ZAF-ZWE	421825
24	MDG-MUS	53628
25	MDG-SYC	12376
26	MWI-MOZ	18221

27	MWI-TZA	17516
28	MWI-ZMB	38093
29	MWI-ZWE	14032
30	MOZ-TZA	13427
31	MOZ-ZWE	242
32	MUS-SYC	21062
33	TZA-SYC	9901
34	TZA-ZMB	25546
35	TZA-ZWE	21924
36	ZMB-NAM	7284
37	ZMB-ZWE	171263
38	ZWE-NAM	10215

Note. Created from Appendix E12

Appendix E15

SADC Country-pairs and Average Distances Covered 2011-2015

Observation	Country-pair	Distances Covered	
Observation	Country-pair	Distances covered	
1	AGO-COD	75114	
2	AGO-MOZ	107535	
3	AGO-NAM	155573	
4	AGO-ZMB	3143	
5	AGO-ZWE	37490	
6	BWA-NAM	151491	
7	BWA-ZMB	817694	

8	BWA-ZWE	70698
9	COD-ZMB	1415650
10	ZAF-AGO	1858303
11	ZAF-BWA	571874
12	ZAF-COD	2602204
13	ZAF-LSO	426594
14	ZAF-MDG	980252
15	ZAF-MWI	1784362
16	ZAF-MOZ	2340268
17	ZAF-MUS	3716059
18	ZAF-NAM	6656295
19	ZAF-SWZ	573306
20	ZAF-SYC	598504
21	ZAF-TZA	2828553
22	ZAF-ZMB	4767696
23	ZAF-ZWE	5074176
24	MDG-MUS	313478
25	MDG-SYC	363987
26	MWI-MOZ	741163
27	MWI-TZA	308872
28	MWI-ZMB	756519
29	MWI-ZWE	165891
30	MOZ-TZA	352341
31	MOZ-ZWE	53697

32	MUS-SYC	341222
33	TZA-SYC	646130
34	TZA-ZMB	398712
35	TZA-ZWE	327249
36	ZMB-NAM	246473
37	ZMB-ZWE	523230
38	ZWE-NAM	192199

Note. Created from Appendix E6 and Appendix E10

Appendix E16

SADC Country	y-pairs and	Average	Revenue	Passenger	Kilometers	2011-2015
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Observation	Country-pair	Revenue Passenger Kilometers ('000)
1	AGO-COD	711407400
2	AGO-MOZ	287224845
3	AGO-NAM	25191431475
4	AGO-ZMB	373613760
5	AGO-ZWE	445155360
6	BWA-NAM	427022382
7	BWA-ZMB	400669848
8	BWA-ZWE	1177892144
9	COD-ZMB	23417681392
10	ZAF-AGO	239748941591
11	ZAF-BWA	141622379360
12	ZAF-COD	191259421894

13	ZAF-LSO	13214178224
14	ZAF-MDG	29863370343
15	ZAF-MWI	207740828444
16	ZAF-MOZ	690510142674
17	ZAF-MUS	561678597261
18	ZAF-NAM	2453111053305
19	ZAF-SWZ	19511886680
20	ZAF-SYC	16566002274
21	ZAF-TZA	295914698205
22	ZAF-ZMB	1283530542081
23	ZAF-ZWE	2140414265868
24	MDG-MUS	16811200996
25	MDG-SYC	4504704880
26	MWI-MOZ	13504728420
27	MWI-TZA	5410197807
28	MWI-ZMB	28818071221
29	MWI-ZWE	2327781612
30	MOZ-TZA	4730878564
31	MOZ-ZWE	12994770
32	MUS-SYC	7186823336
33	TZA-SYC	6397331200
34	TZA-ZMB	10185499035
35	TZA-ZWE	7174597680
36	ZMB-NAM	1795309915

- 37 ZMB-ZWE 89609904120
- 1963313034 38 ZWE-NAM

Note. Created from Appendix E14 and Appendix E15

Appendix E17

SADC Country-pairs and Average International Revenue Passenger Load Factors 2011-2015

Observation	Country-pair	Passenger Load Factors		
1	AGO-COD	52580		
2	AGO-MOZ	27695		
3	AGO-NAM	296025		
4	AGO-ZMB	59874		
5	AGO-ZWE	71339		
6	BWA-NAM	106809		
7	BWA-ZMB	77544		
8	BWA-ZWE	134524		
9	COD-ZMB	990931		
10	ZAF-AGO	1300813		
11	ZAF-BWA	400312		
12	ZAF-COD	1821553		
13	ZAF-LSO	298612		
14	ZAF-MDG	686183		
15	ZAF-MWI	1249058		
16	ZAF-MOZ	1638186		
17	ZAF-MUS	2601243		

18	ZAF-NAM	4659413
19	ZAF-SWZ	401314
20	ZAF-SYC	418947
21	ZAF-TZA	1979985
22	ZAF-ZMB	3337391
23	ZAF-ZWE	3551924
24	MDG-MUS	219433
25	MDG-SYC	254791
26	MWI-MOZ	518814
27	MWI-TZA	216209
28	MWI-ZMB	529559
29	MWI-ZWE	116122
30	MOZ-TZA	246644
31	MOZ-ZWE	37666
32	MUS-SYC	238876
33	TZA-SYC	452300
34	TZA-ZMB	279093
35	TZA-ZWE	229074
36	ZMB-NAM	172543
37	ZMB-ZWE	366260
38	ZWE-NAM	134538

Note. Created from Appendix E12 and Appendix E16

Appendix F

Multivariable Econometric Datasets

Appendix F1a

Multivariable Econometric Dataset 1 for Hypothesis 1

Observation	Country-pair	Y	X1	X2	X3
	-	International Air	GDP Product	Great Circle	Bilateral
		Passenger Seats	$(GDP_i * GDP_j)$	Distance	Indicator
		Unit	Billion	Unit	Unit
1	AGO-COD	13530	4129829424000	5286	0
2	AGO-MOZ	10371	2111700000000	2784	0
3	AGO-NAM	85099	1556600000000	1579	0
4	AGO-ZMB	6240	3205972800000	1794	0
5	AGO-ZWE	6240	3206000000000	1794	0
6	BWA-NAM	3998	183837996000	1467	0
7	BWA-ZMB	5167	378671216561	1055	0
8	BWA-ZWE	8756	270850856972	924	1
9	COD-ZMB	23632	811558300000	3999	1
10	ZAF-AGO	184307	47239000000000	2491	1
11	ZAF-BWA	353780	5579600000000	278	0
12	ZAF-COD	104998	11958000000000	2795	0
13	ZAF-LSO	44252	925531647175	364	1
14	ZAF-MDG	43521	4323300000000	2145	1
15	ZAF-MWI	166318	2318900000000	1482	1
16	ZAF-MOZ	421509	6114200000000	443	0

17	ZAF-MUS	215927	4422100000000	3066	1
18	ZAF-NAM	526485	4506900000000	1189	1
19	ZAF-SWZ	48620	1693900000000	315	1
20	ZAF-SYC	39542	453215770254	3764	0
21	ZAF-TZA	149453	16069000000000	2449	1
22	ZAF-ZMB	384591	9283300000000	1204	1
23	ZAF-ZWE	602607	6640000000000	970	1
24	MDG-MUS	76612	626386959384	1059	1
25	MDG-SYC	17680	14320250000	2800	0
26	MWI-MOZ	26030	103655640000	1925	0
27	MWI-TZA	25023	272426356474	990	1
28	MWI-ZMB	54419	157380796817	599	1
29	MWI-ZWE	20046	112569220539	525	1
30	MOZ-TZA	19181	718358196888	2230	1
31	MOZ-ZWE	345	296798996000	1413	0
32	MUS-SYC	30086	14651875183	1741	0
33	TZA-SYC	14144	53227475000	6213	1
34	TZA-ZMB	36495	1090600000000	1616	1
35	TZA-ZWE	31320	780075803000	1515	0
36	ZMB-NAM	10405	305868600000	2393	1
37	ZMB-ZWE	244662	450639788885	397	0
38	ZWE-NAM	14593	218775258000	924	1

BASA = Bilateral Air Service Agreement

Note. Compiled from Appendix E5, Appendix E6, Appendix E7 and Appendix E12

Appendix F1b

Multivariable Econometric Dataset 1 for Hypothesis 1 (Logarithmically Transformed)

$$\ln(PassVol) = \beta_0 + \beta_1 \ln(GDP \ Product) + \beta_2 \ln(Distance)$$

Observation	Country-pair	Y	X1	X2	X3
	-	Natural Log of	Natural Log of	Natural Log of	Dummy Variable:
		International Air	GDP Product	Great Circle	Bilateral Indicator
		Passenger Seats		Distance	
1	AGO-COD	9.5127	49.7725	8.5728	0
2	AGO-MOZ	9.2468	49.1018	7.9316	0
3	AGO-NAM	11.3516	48.7968	7.3645	0
4	AGO-ZMB	8.7387	49.5193	7.4922	0
5	AGO-ZWE	8.7387	49.5193	7.4922	0
6	BWA-NAM	8.2935	46.6606	7.291	0
7	BWA-ZMB	8.5500	47.3832	6.9613	0
8	BWA-ZWE	9.0775	47.0481	6.8287	1
9	COD-ZMB	10.0704	48.1455	8.2938	1
10	ZAF-AGO	12.1244	52.2095	7.8204	1
11	ZAF-BWA	12.7764	50.0734	5.6276	0
12	ZAF-COD	11.5617	50.8357	7.9356	0
13	ZAF-LSO	10.6977	48.2769	5.8972	1
14	ZAF-MDG	10.6810	49.8183	7.6709	1

+
$$\beta$$
.(*Bilateral Indicators*) (2)

15	ZAF-MWI	12.0217	49.1954	7.3011	1
16	ZAF-MOZ	13.6116	50.1649	6.0936	0
17	ZAF-MUS	12.2827	49.8409	8.0281	1
18	ZAF-NAM	13.1740	49.8599	7.0809	1
19	ZAF-SWZ	10.7918	48.8813	5.7526	1
20	ZAF-SYC	10.5851	47.5629	8.2332	0
21	ZAF-TZA	11.9147	51.1312	7.8034	1
22	ZAF-ZMB	12.8599	50.5825	7.0934	1
23	ZAF-ZWE	13.3090	50.2474	6.8773	1
24	MDG-SYC	9.7802	44.1082	7.9374	1
25	MDG-MUS	11.2465	47.8865	6.9651	0
26	MWI-MOZ	10.167	46.0876	7.5627	0
27	MWI-TZA	10.1276	47.0539	6.8977	1
28	MWI-ZMB	10.9045	46.5052	6.3953	1
29	MWI-ZWE	9.9058	46.1701	6.2634	1
30	MOZ-TZA	9.8617	48.0235	7.7098	1
31	MOZ-ZWE	5.8435	47.1396	7.2535	0
32	MUS-SYC	10.3118	44.1311	7.4622	0
33	TZA-SYC	9.557	45.4211	8.7344	1
34	TZA-ZMB	10.5049	48.4410	7.3877	1
35	TZA-ZWE	10.352	48.1059	7.3232	0
36	ZMB-NAM	9.25	47.1697	7.7803	1
37	ZMB-ZWE	12.4076	47.5572	5.9839	0
38	ZWE-NAM	9.5883	46.8346	6.8287	1

Dummy: 0 = Restrictive BASA; 1 = Liberal BASA

BASA = Bilateral Air Service Agreement

Note. Created from Appendix F1a

Appendix F2a

Multivariable Econometric Dataset 2 for hypothesis 2

$ \begin{array}{ c c c c c } \hline International & Great Circle & PassVolFit & Bilateral \\ Airfare per Kilometer (USS) & (Fitted Values) & Indicator \\ Kilometer (USS) & (Fitted Values) & Indicator \\ 0 & 274600 & 5286 & 26017 & 0 \\ 2 & AGO-MOZ & .594400 & 2784 & 27052 & 0 \\ 3 & AGO-NAM & .578200 & 1579 & 31367 & 0 \\ 4 & AGO-ZMB & .581700 & 1794 & 39254 & 0 \\ 5 & AGO-ZWE & .427200 & 1794 & 39254 & 0 \\ 6 & BWA-NAM & .333100 & 1467 & 13998 & 0 \\ 7 & BWA-ZMB & .429400 & 1055 & 21748 & 0 \\ 8 & BWA-ZWE & .445900 & 924 & 37722 & 1 \\ 9 & COD-ZMB & .185000 & 3999 & 29065 & 1 \\ 10 & ZAF-AGO & .443500 & 2491 & 180322 & 1 \\ 11 & ZAF-BWA & .513700 & 278 & 117948 & 0 \\ \end{array} $	Observation	Country-pair	Y	X1	X3	X4
Airfare per Kilometer (USS) Distance Pitted Values) Indicator 1 AGO-COD 274600 5286 26017 0 2 AGO-MOZ .594400 2784 27052 0 3 AGO-NAM .578200 1579 31367 0 4 AGO-ZMB .581700 1794 39254 0 5 AGO-ZWE .427200 1794 39254 0 6 BWA-NAM .333100 1467 13998 0 7 BWA-ZMB .429400 1055 21748 0 8 BWA-ZWE .445900 924 37722 1 9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0			International	Great Circle	PassVolFit	Bilateral
Kilometer (US\$) Inducts 1 AGO-COD .274600 5286 26017 0 2 AGO-MOZ .594400 2784 27052 0 3 AGO-NAM .578200 1579 31367 0 4 AGO-ZMB .581700 1794 39254 0 5 AGO-ZWE .427200 1794 39254 0 6 BWA-NAM .333100 1467 13998 0 7 BWA-ZMB .429400 1055 21748 0 8 BWA-ZWE .445900 924 37722 1 9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0			Airfare per	Distance	(Fitted Values)	Indicator
1 AGO-COD .274600 5286 26017 0 2 AGO-MOZ .594400 2784 27052 0 3 AGO-NAM .578200 1579 31367 0 4 AGO-ZMB .581700 1794 39254 0 5 AGO-ZWE .427200 1794 39254 0 6 BWA-NAM .333100 1467 13998 0 7 BWA-ZMB .429400 1055 21748 0 8 BWA-ZWE .445900 924 37722 1 9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0			Kilometer (US\$)		(111111 (111111))	
2 AGO-MOZ .594400 2784 27052 0 3 AGO-NAM .578200 1579 31367 0 4 AGO-ZMB .581700 1794 39254 0 5 AGO-ZWE .427200 1794 39254 0 6 BWA-NAM .333100 1467 13998 0 7 BWA-ZMB .429400 1055 21748 0 8 BWA-ZWE .445900 924 37722 1 9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0	1	AGO-COD	.274600	5286	26017	0
3 AGO-NAM .578200 1579 31367 0 4 AGO-ZMB .581700 1794 39254 0 5 AGO-ZWE .427200 1794 39254 0 6 BWA-NAM .333100 1467 13998 0 7 BWA-ZMB .429400 1055 21748 0 8 BWA-ZWE .445900 924 37722 1 9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0	2	AGO-MOZ	.594400	2784	27052	0
4 AGO-ZMB .581700 1794 39254 0 5 AGO-ZWE .427200 1794 39254 0 6 BWA-NAM .333100 1467 13998 0 7 BWA-ZMB .429400 1055 21748 0 8 BWA-ZWE .445900 924 37722 1 9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0	3	AGO-NAM	.578200	1579	31367	0
5 AGO-ZWE .427200 1794 39254 0 6 BWA-NAM .333100 1467 13998 0 7 BWA-ZMB .429400 1055 21748 0 8 BWA-ZWE .445900 924 37722 1 9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0	4	AGO-ZMB	.581700	1794	39254	0
6 BWA-NAM .333100 1467 13998 0 7 BWA-ZMB .429400 1055 21748 0 8 BWA-ZWE .445900 924 37722 1 9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0	5	AGO-ZWE	.427200	1794	39254	0
7 BWA-ZMB .429400 1055 21748 0 8 BWA-ZWE .445900 924 37722 1 9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0	6	BWA-NAM	.333100	1467	13998	0
8 BWA-ZWE .445900 924 37722 1 9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0	7	BWA-ZMB	.429400	1055	21748	0
9 COD-ZMB .185000 3999 29065 1 10 ZAF-AGO .443500 2491 180322 1 11 ZAF-BWA .513700 278 117948 0	8	BWA-ZWE	.445900	924	37722	1
10ZAF-AGO.4435002491180322111ZAF-BWA.5137002781179480	9	COD-ZMB	.185000	3999	29065	1
11 ZAF-BWA .513700 278 117948 0	10	ZAF-AGO	.443500	2491	180322	1
	11	ZAF-BWA	.513700	278	117948	0
12 ZAF-COD .168900 2795 53466 0	12	ZAF-COD	.168900	2795	53466	0
13 ZAF-LSO .359900 364 95101 1	13	ZAF-LSO	.359900	364	95101	1
14 ZAF-MDG .331000 2145 75441 1	14	ZAF-MDG	.331000	2145	75441	1
	17		20 1500		70205	-

ZAF-MOZ	.721000	443	98096	0
ZAF-MUS	.228000	3066	64280	1
ZAF-NAM	.243900	1189	101367	1
ZAF-SWZ	.507900	315	129211	1
ZAF-SYC	.175300	3764	12791	0
ZAF-TZA	.142100	2449	118860	1
ZAF-ZMB	.307300	1204	133960	1
ZAF-ZWE	.342300	970	130027	1
MDG-SYC	.512800	1059	7011	1
MDG-MUS	.296800	2800	26471	0
MWI-MOZ	.356100	1925	9821	0
MWI-TZA	.228300	990	36593	1
MWI-ZMB	.462400	599	37384	1
MWI-ZWE	.409500	525	34871	1
MOZ-TZA	.217500	2230	36519	1
MOZ-ZWE	.627700	1413	17207	0
MUS-SYC	.510000	1741	4765	0
TZA-SYC	.090800	6213	8067	1
TZA-ZMB	.324500	1616	50131	1
TZA-ZWE	.546900	1515	24362	0
ZMB-NAM	.281700	2393	25230	1
ZMB-ZWE	.326200	397	36979	0
ZWE-NAM	.467700	924	34676	1
	ZAF-MOZ ZAF-MUS ZAF-NAM ZAF-SWZ ZAF-SYC ZAF-TZA ZAF-ZMB ZAF-ZWE MDG-SYC MWI-MOZ MWI-TZA MWI-TZA MWI-ZWE MOZ-TZA MOZ-TZA TZA-SYC TZA-SYC ZAF-ZWE ZAF-ZWE MOZ-TZA ZUB-NAM ZWE-NAM	ZAF-MOZ.721000ZAF-MUS.228000ZAF-NAM.243900ZAF-SWZ.507900ZAF-SYC.175300ZAF-TZA.142100ZAF-ZMB.307300ZAF-ZME.342300MDG-SYC.512800MDG-MUS.296800MWI-MOZ.356100MWI-TZA.228300MWI-TZA.228300MWI-ZMB.462400MWI-ZME.409500MOZ-TZA.217500MOZ-SYC.510000TZA-SYC.090800TZA-ZME.324500TZA-ZME.326200ZMB-NAM.281700ZMB-XAE.326200	ZAF-MOZ .721000 443 ZAF-MUS .228000 3066 ZAF-NAM .243900 1189 ZAF-SWZ .507900 315 ZAF-SYC .175300 3764 ZAF-TZA .142100 2449 ZAF-ZMB .307300 1204 ZAF-ZWE .342300 970 MDG-SYC .512800 1059 MDG-MUS .296800 2800 MWI-MOZ .356100 1925 MWI-TZA .228300 990 MWI-ZWE .409500 525 MOZ-TZA .217500 2230 MOZ-TZA .217500 1413 MUS-SYC .510000 1741 TZA-SYC .090800 6213 TZA-ZME .324500 1616 TZA-ZME .546900 1515 ZMB-NAM .281700 2393 ZMB-NAM .326200 397	ZAF-MOZ .721000 443 98096 ZAF-MUS .228000 3066 64280 ZAF-NAM .243900 1189 101367 ZAF-SWZ .507900 315 129211 ZAF-SWZ .507900 315 129211 ZAF-SWZ .175300 3764 12791 ZAF-TZA .142100 2449 118860 ZAF-ZMB .307300 1204 133960 ZAF-ZWE .342300 970 130027 MDG-SYC .512800 1059 7011 MDG-MUS .296800 2800 26471 MWI-MOZ .356100 1925 9821 MWI-TZA .228300 990 36593 MWI-ZMB .462400 599 37384 MWI-ZWE .409500 525 34871 MOZ-TZA .217500 2230 36519 MOZ-ZWE .50000 1741 4765 TZA-SYC .090800 6213 8067

Dummy: 0 = Restrictive BASA; 1 = Liberal BASA

Note. Compiled from Appendix E6, Appendix E7 and Appendix E8

Appendix F2b

Multivariable Econometric Dataset 2 for Hypothesis 2 (Logarithmically Transformed)

 $AirfarePerKm = \beta_0 + \beta_1 \ln(Distance) + \beta_2 \ln(PassVolFit)$

Observation	Country-pair	Y	X1	X3	X4
		International Airfare per Kilometer (US\$)	Natural Log of Great Circle Distance	Natural Log of PassVolFit (Fitted Values)	Bilateral Indicator
1	AGO-COD	.274600	8.5728	10.1665	0
2	AGO-MOZ	.594400	7.9316	10.2055	0
3	AGO-NAM	.578200	7.3645	10.3535	0
4	AGO-ZMB	.581700	7.4922	10.5778	0
5	AGO-ZWE	.427200	7.4922	10.5778	0
6	BWA-NAM	.333100	7.291	9.5467	0
7	BWA-ZMB	.429400	6.9613	9.9873	0
8	BWA-ZWE	.445900	6.8287	10.5380	1
9	COD-ZMB	.185000	8.2938	10.2773	1
10	ZAF-AGO	.443500	7.8204	12.1025	1
11	ZAF-BWA	.513700	5.6276	11.6780	0
12	ZAF-COD	.168900	7.9356	10.8868	0
13	ZAF-LSO	.359900	5.8972	11.4627	1

+ β_3 (Bilateral Indicators) (4)

14	ZAF-MDG	.331000	7.6709	11.2311	1
15	ZAF-MWI	.394700	7.3011	11.1606	1
16	ZAF-MOZ	.721000	6.0936	11.4937	0
17	ZAF-MUS	.228000	8.0281	11.0710	1
18	ZAF-NAM	.243900	7.0809	11.5265	1
19	ZAF-SWZ	.507900	5.7526	11.7692	1
20	ZAF-SYC	.175300	8.2332	9.4565	0
21	ZAF-TZA	.142100	7.8034	11.6857	1
22	ZAF-ZMB	.307300	7.0934	11.8053	1
23	ZAF-ZWE	.342300	6.8773	11.7755	1
24	MDG-SYC	.512800	7.9374	8.8552	1
25	MDG-MUS	.296800	6.9651	10.1838	0
26	MWI-MOZ	.356100	7.5627	9.1923	0
27	MWI-TZA	.228300	6.8977	10.5076	1
28	MWI-ZMB	.462400	6.3953	10.5290	1
29	MWI-ZWE	.409500	6.2634	10.4594	1
30	MOZ-TZA	.217500	7.7098	10.5056	1
31	MOZ-ZWE	.627700	7.2535	9.7531	0
32	MUS-SYC	.510000	7.4622	8.4691	0
33	TZA-SYC	.090800	8.7344	8.9955	1
34	TZA-ZMB	.324500	7.3877	10.8224	1
35	TZA-ZWE	.546900	7.3232	10.1008	0
36	ZMB-NAM	.281700	7.7803	10.1358	1
37	ZMB-ZWE	.326200	5.9839	10.5181	0

38	ZWE-NAM	.467700	6.8287	10.4538	1

Dummy: 0 = Restrictive BASA; 1 = Liberal BASA

BASA = Bilateral Air Service Agreement

Note. Created from Appendix F2a

Appendix F3a

Multivariable Econometric Dataset 3 for Hypothesis 3

Observation	Country-pair	Y	X1	X2	X3	X4	X5
		International Flights per Aircraft	PassVolFit (Fitted Values)	Number of Seats per Flight (Acsize)	Great Circle Distance	Number of Operators	Bilateral Indicator
1	AGO-COD	105	26017	129	5286	1	0
2	AGO-MOZ	105	27052	99	2784	1	0
3	AGO-NAM	364	31367	234	1579	2	0
4	AGO-ZMB	52	39254	120	1794	1	0
5	AGO-ZWE	52	39254	120	1794	1	0
6	BWA-NAM	52	13998	77	1467	2	0
7	BWA-ZMB	105	21748	49	1055	1	0
8	BWA-ZWE	208	37722	42	924	1	1
9	COD-ZMB	177	29065	134	3999	2	1
10	ZAF-AGO	373	180322	494	2491	2	1
11	ZAF-BWA	1864	117948	190	278	3	0
12	ZAF-COD	466	53466	225	2795	2	0
13	ZAF-LSO	1172	95101	38	364	1	1
14	ZAF-MDG	229	75441	190	2145	2	1

15	ZAF-MWI	602	70305	276	1482	2	1
16	ZAF-MOZ	1321	98096	319	443	4	0
17	ZAF-MUS	404	64280	534	3066	3	1
18	ZAF-NAM	1400	101367	376	1189	4	1
19	ZAF-SWZ	1820	129211	27	315	1	1
20	ZAF-SYC	159	12791	249	3764	1	0
21	ZAF-TZA	578	118860	259	2449	2	1
22	ZAF-ZMB	990	133960	388	1204	4	1
23	ZAF-ZWE	1308	130027	461	970	4	1
24	MDG-SYC	148	7011	518	1059	2	1
25	MDG-MUS	65	26471	272	2800	2	0
26	MWI-MOZ	385	9821	68	1925	2	0
27	MWI-TZA	156	36593	160	990	2	1
28	MWI-ZMB	421	37384	129	599	3	1
29	MWI-ZWE	158	34871	127	525	2	1
30	MOZ-TZA	158	36519	121	2230	1	1
31	MOZ-ZWE	38	17207	9	1413	1	0
32	MUS-SYC	196	4765	154	1741	1	0
33	TZA-SYC	104	8067	136	6213	1	1
34	TZA-ZMB	263	50131	139	1616	1	1
35	TZA-ZWE	216	24362	145	1515	1	0
36	ZMB-NAM	103	25230	101	2393	1	1
37	ZMB-ZWE	439	36979	557	397	3	0
38	ZWE-NAM	104	34676	140	924	2	1

BASA = Bilateral Air Service Agreement

Note. Compiled from Appendix E6, Appendix E7, Appendix E9, Appendix E11 and Appendix E12

Appendix F3b

Multivariable Econometric Dataset 3 for Hypothesis 3 (Logarithmically Transformed)

 $ln(Frequency) = \beta_0 + \beta_1 ln(PassVolFit) + \beta_2 ln(Acsize) + \beta_3 ln(Distance)$

Observation	Country-pair	Y	X1	X2	X3	X4	X5
		Natural Log of	Natural Log of	Natural Log of	Natural Log	Natural Log	Bilateral
		International	PassVolFit	Seats per	of Great	of Number of	Indicator
		Flights per Aircraft	(Fitted Values)	Flight	Circle	Operators	
		(Departure		(Aircraft Size)	Distance		
		Frequency)					
1	AGO-COD	4.6540	10.1665	4.8598	8.5728	.0000	0
2	AGO-MOZ	4.6540	10.2055	4.5951	7.9316	.0000	0
3	AGO-NAM	6.2972	10.3535	5.4553	7.3645	.6931	0
4	AGO-ZMB	3.9512	10.5778	4.7875	7.4922	.0000	0
5	AGO-ZWE	3.9512	10.5778	4.7875	7.4922	.0000	0
6	BWA-NAM	3.9512	9.5467	4.3438	7.291	.6931	0
7	BWA-ZMB	4.6540	9.9873	3.8918	6.9613	.0000	0
8	BWA-ZWE	5.3375	10.5380	3.7377	6.8287	.0000	1
9	COD-ZMB	5.1761	10.2773	4.8978	8.2938	.6931	1

 $+\beta_4 \ln(Operators) + (Bilateral Indicators)$ (6)

10	ZAF-AGO	5.8216	12.1025	6.2025	7.8204	.6931	1
11	ZAF-BWA	7.5305	11.6780	5.2470	5.6276	1.0986	0
12	ZAF-COD	6.1442	10.8868	5.4161	7.9356	.6931	0
13	ZAF-LSO	7.0665	11.4627	3.6376	5.8972	.0000	1
14	ZAF-MDG	5.4337	11.2311	5.2470	7.6709	.6931	1
15	ZAF-MWI	6.4003	11.1606	5.6204	7.3011	.6931	1
16	ZAF-MOZ	6.3861	11.4937	5.7652	6.0936	1.3863	0
17	ZAF-MUS	6.0014	11.0710	6.2804	8.0281	1.0986	1
18	ZAF-NAM	7.2442	11.5265	5.9296	7.0809	1.3863	1
19	ZAF-SWZ	7.5066	11.7692	3.3322	5.7526	.0000	1
20	ZAF-SYC	5.0689	9.4565	5.5175	8.2332	.0000	0
21	ZAF-TZA	6.3596	11.6857	5.5568	7.8034	.6931	1
22	ZAF-ZMB	6.8977	11.8053	5.9610	7.0934	1.3863	1
23	ZAF-ZWE	7.1763	11.7755	6.1334	6.8773	1.3863	1
24	MDG-MUS	4.9972	8.8552	6.2500	7.9374	.6931	1
25	MDG-SYC	4.9972	10.1838	6.2500	6.9651	.6931	0
26	MWI-MOZ	5.9532	9.1923	4.2195	7.5627	.6931	0
27	MWI-TZA	5.0499	10.5076	5.0751	6.8977	.6931	1
28	MWI-ZMB	6.0426	10.5290	4.8598	6.3953	1.0986	1
29	MWI-ZWE	5.0626	10.4594	4.8441	6.2634	.6931	1
30	MOZ-TZA	5.0626	10.5056	4.7957	7.7098	.0000	1
31	MOZ-ZWE	3.6376	9.7531	2.1972	7.2535	.0000	0
32	MUS-SYC	5.2781	8.4691	5.0370	7.4622	.0000	0
33	TZA-SYC	4.6444	8.9955	4.9127	8.7344	.0000	1
34	TZA-ZMB	5.5722	10.8224	4.9345	7.3877	.0000	1
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35	TZA-ZWE	5.3753	10.1008	4.9767	7.3232	.0000	0
36	ZMB-NAM	4.6347	10.1358	4.6151	7.7803	.0000	1
37	ZMB-ZWE	6.0845	10.5181	6.3226	5.9839	1.0986	0
38	ZWE-NAM	4.6444	10.4538	4.9416	6.8287	.6931	1

Dummy: 0 = Restrictive BASA; 1 = Liberal BASA

BASA = Bilateral Air Service Agreement

Note. Created from Appendix F3a

Appendix F4a

Multivariable Econometric Dataset 4 for Hypothesis 4

 $ln(RPLFactor) = \beta_0 + \beta_1 ln(PassVol) + \beta_2 ln(Distance) + \beta_2 ln(Di$

β .(Bilateral Indicator) -	$\beta_K \ln(Var_K)$	(8)

Observation	Country-pair	Y	X1	X3	X4
	-	RPLFactor	PassVol	Distance	Bilateral Indicator
1	AGO-COD	52580	9471	5286	0
2	AGO-MOZ	27695	2671	2784	0
3	AGO-NAM	296025	161927	1579	0
4	AGO-ZMB	59874	11874	1794	0
5	AGO-ZWE	71339	11874	1794	0
6	BWA-NAM	106809	2799	1467	0
7	BWA-ZMB	77544	490	1055	0
8	BWA-ZWE	134524	16661	924	1
9	COD-ZMB	990931	16542	3999	1

10	ZAF-AGO	1300813	129015	2491	1
11	ZAF-BWA	400312	247646	278	0
12	ZAF-COD	1821553	73499	2795	0
13	ZAF-LSO	298612	30976	364	1
14	ZAF-MDG	686183	30465	2145	1
15	ZAF-MWI	1249058	116423	1482	1
16	ZAF-MOZ	1638186	295056	443	0
17	ZAF-MUS	2601243	151149	3066	1
18	ZAF-NAM	4659413	368540	1189	1
19	ZAF-SWZ	401314	34034	315	1
20	ZAF-SYC	418947	27679	3764	0
21	ZAF-TZA	1979985	104617	2449	1
22	ZAF-ZMB	3337391	269214	1204	1
23	ZAF-ZWE	3551924	421825	970	1
24	MDG-SYC	219433	53628	1059	1
25	MDG-MUS	254791	12376	2800	0
26	MWI-MOZ	518814	18221	1925	0
27	MWI-TZA	216209	17516	990	1
28	MWI-ZMB	529559	38093	599	1
29	MWI-ZWE	116122	14032	525	1
30	MOZ-TZA	246644	13427	2230	1
31	MOZ-ZWE	37666	242	1413	0
32	MUS-SYC	238876	21062	1741	0
33	TZA-SYC	452300	9901	6213	1

34	TZA-ZMB	279093	25546	1616	1
35	TZA-ZWE	229074	21924	1515	0
36	ZMB-NAM	172543	7284	2393	1
37	ZMB-ZWE	366260	171263	397	0
38	ZWE-NAM	134538	10215	924	1

Dummy: 0 = Restrictive BASA; 1 = Liberal BASA

BASA = Bilateral Air Service Agreement

Note. Created from Appendix E6, Appendix E7, Appendix E15 and Appendix E17

Appendix F4b

Multivariable Econometric Dataset 4 for Hypothesis 4 (Logarithmically Transformed)

 $ln(RPLFactor) = \beta_0 + \beta_1 ln(PassVol) + \beta_2 ln(DistanceCov) + \beta_$

$p.(Dilateral Inalcalor) + p_K III(V ar_K)$ ($dicator$) + $\beta_{\kappa} \ln(Var_{\kappa})$	(8
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Observation	Country-pair	Y	X1	X3	X4
		Natural Log of	Natural Log of	Natural Log of	Bilateral Indicator
		RPLFactor	PassVol	Distance	
1	AGO-COD	10.8701	9.1560	8.5728	0
2	100 M07	10.2200	0.0001	7.0216	0
2	AGO-MOZ	10.2290	8.8901	7.9316	0
3	AGO-NAM	12.5982	10.9949	7.3645	0
4	AGO-ZMB	11.0000	8.3821	7.4922	0
5	AGO-ZWE	11.1752	8.3821	7.4922	0
6	BWA-NAM	11.5788	7.9370	7.291	0
7	BWA-ZMB	11.2586	8.1934	6.9613	0
8	BWA-ZWE	11.8095	8.7208	6.8287	1

9	COD-ZMB	13.8064	9.7137	8.2938	1
10	ZAF-AGO	14.0785	11.7677	7.8204	1
11	ZAF-BWA	12.9000	12.4198	5.6276	0
12	ZAF-COD	14.4152	11.2050	7.9356	0
13	ZAF-LSO	12.6069	10.3410	5.8972	1
14	ZAF-MDG	13.4389	10.3243	7.6709	1
15	ZAF-MWI	14.0379	11.6650	7.3011	1
16	ZAF-MOZ	14.3091	12.5949	6.0936	0
17	ZAF-MUS	14.7715	11.9260	8.0281	1
18	ZAF-NAM	15.3544	12.8173	7.0809	1
19	ZAF-SWZ	12.9025	10.4351	5.7526	1
20	ZAF-SYC	12.9455	10.2284	8.2332	0
21	ZAF-TZA	14.4986	11.5581	7.8034	1
22	ZAF-ZMB	15.0207	12.5033	7.0934	1
23	ZAF-ZWE	15.0830	12.9523	6.8773	1
24	MDG-SYC	12.2988	10.8898	7.9374	1
25	MDG-MUS	12.4482	9.4235	6.9651	0
26	MWI-MOZ	13.1593	9.8103	7.5627	0
27	MWI-TZA	12.2840	9.7709	6.8977	1
28	MWI-ZMB	13.1798	10.5478	6.3953	1
29	MWI-ZWE	11.6624	9.5491	6.2634	1
30	MOZ-TZA	12.4157	9.5050	7.7098	1
31	MOZ-ZWE	10.5365	5.4889	7.2535	0
32	MUS-SYC	12.3837	9.9552	7.4622	0

33	TZA-SYC	13.0221	9.2004	8.7344	1
34	TZA-ZMB	12.5393	10.1482	7.3877	1
35	TZA-ZWE	12.3418	9.9953	7.3232	0
36	ZMB-NAM	12.0584	8.8934	7.7803	1
37	ZMB-ZWE	12.8111	12.051	5.9839	0
38	ZWE-NAM	11.8096	9.2316	6.8287	1

Dummy: 0 = Restrictive BASA; 1 = Liberal BASA

BASA = Bilateral Air Service Agreement

Note. Created from Appendix F4a

Appendix G

UREC Consent Forms

Appendix G1

Provisional Offer Application



REAF_DSPA_ Doctoral Studies Provisional Approval REAF Form 2.pdf

Appendix G2

UREC Decision



UREC1 Decision DS 1 Rutherford Kanunkha_O16046G15316.pdf

Appendix G3

Final Approval Application

REAF_DS_ Doctoral Studies REAF Approved-3.pdf

Appendix G4

UREC Final Decision

PDF

UREC1 Decision Rutherford Kanunkha UUM DBA O24684G25029.pdf