



Cape Peninsula
University of Technology

Title

Institutional and spatial economic factors that influence the location of manufacturing firms in the vicinity of Cape Town International Airport, South Africa

by

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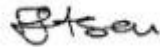
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A handwritten signature in black ink, appearing to read 'Jtsen'.

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ABSTRACT

Manufacturing activities are crucial to the sustenance of the contemporary economies, and manufacturing is one of the activities that locate on and around airports. Despite the growing popularity of the models of airport-led development, numerous airports have failed to transition towards the so-called airport cities or other idealised spatial forms of airport-related development. This failure arguably raises questions on whether planners and policymakers comprehensively understand forces that drive development around airports. The aim of the thesis is to analyse the influence of institutional and spatial economic factors on the location of manufacturing firms in the vicinity of Cape Town International Airport in South Africa. The thesis addresses the following objectives: Firstly, to establish the types / composition of manufacturing firms located on and around Cape Town International Airport. Secondly, to analyse the relationship between manufacturing firms and other firms on and around Cape Town International Airport and with firms located at municipal, provincial, national and international scales. Thirdly, to analyse the influence of spatial economic factors on the location of manufacturing firms on and around Cape Town International Airport. Fourthly, to establish the role of relevant institutions in facilitating the location of manufacturing firms on and around Cape Town International Airport. Revolving around a single case study of Cape Town International Airport and its environs, the study was based on the survey interviews conducted with the representatives of the manufacturing firms as well as qualitative interviews conducted with the City of Cape Town municipality and Airports Company South Africa (ACSA) officials. It was found out that the manufacturing concentration around the airport comprises small firms that engage in light manufacturing activities. The majority of the manufacturing firms use the airport for airfreight purposes at least on a quarterly basis. A number of stakeholders inform (in different ways) the location of manufacturing firms on and around the airport. Content analysis conducted in Atlas.ti however showed that the City of Cape Town Spatial Development Framework does not sufficiently acknowledge the role of manufacturing.

Keywords: Cape Town International Airport; Cape Town; institutions; manufacturing; spatial economic forces; clustering; linkages; agglomeration economies

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CHAPTER 1: INTRODUCTION

This chapter introduces the thesis entitled ‘Institutional and spatial economic factors that influence the location of manufacturing activities in the vicinity of Cape Town International Airport, South Africa’. The chapter is organised around seven main sections. Section 1.1 provides a background and context of the topic under investigation, the broad history of aviation, the transformation in the spatial form and economic activity composition of the environs of airports, as well as the impacts of globalisation and the fourth industrial revolution on the manufacturing sector. In order to avoid the misinterpretation of the key terms used in the thesis, Section 1.2 provides the definition of key concepts. Section 1.3 discusses the research problem that the thesis addresses. Section 1.4 presents the research aim, research objectives and questions formulated towards addressing the research problem identified. Section 1.5 presents the research design and a summary of the research methodology and methods used in the study. Section 1.6 presents the contribution and limitations of the study. Section 1.7 closes the chapter and provides a brief overview of the structure of the thesis.

1.1 BACKGROUND AND RATIONALE

In South Africa, manufacturing is one of the key economic sectors. According to Department of Trade and Industry (2019), the South African manufacturing sector accounted for a share of 11% total employment and contributed about 13% of the Gross Domestic Product in 2019. As noted by Scott (1988), an endemic attribute of capitalism, manufacturing activities are susceptible to variation in the technological as well as institutional factors at different moments in history. At any particular period, a prominent geographical pattern of production is observable, and with the subsequent transition from one regime to another, the diverse range of possible locational outcomes are expanded. This is more the case where the shift is accompanied by significant technological innovation (Scott, 1988).

The evolution of cities is largely attributed to the availability (and technological improvements) of transport infrastructure. Transport infrastructures thus play a significant role in the creation of new urban centres, as shown by the rapid growth of seaports in the 18th century, railways in the 19th century, highways in the 20th century and airports in the 21st century (Callanan, 2016; Stangel, 2011). As argued by Rodrigue (2020), airports are in this regard considered to be the fifth wave of transport development.

The environs of airports have been transformed as evidenced by the concentration of various economic activities in the vicinity of airports. Airports and their surrounding areas are therefore emerging as significant centres of economic activity in the 21st century metropolis (Prosperi, 2007; Kasarda, 2010). Over the years, there has been a huge transformation of airports from providing landing and taking off facilities of aircraft into centres of local and regional economic development. Stangel (2011) notes that locations close to airports have attracted investments as they become significant centres of economic development. Airport environs are surrounded by, inter alia, firms providing air transportation services, firms that are frequent users of air transportation, businesses that cater for the ancillary needs of air travellers and employees of the previous two types of firms, and companies that may simply be searching for sites with good highway access.

Van Wilk (2007) is of the view that airport areas have the potential to become locations of mixed land use with urban qualities. Airports environs have been characterised by high concentration of different land uses and economic activities. As discussed further in Chapter Two, normative models of airport related development, namely airport city, aerotropolis, airport corridor and aerea are used to promote the concentration of economic activities, of a mixed-use nature, on and around airports (Appold & Kasarda, 2013; Stangel, 2011; Freestone & Barker, 2011). Manufacturing firms are among the economic activities that typically locate on and around airports.

Globalisation and the Fourth Industrial Revolution are crucial in facilitating airport-centric developments, as well technological improvements within the manufacturing sector. The phenomenon of globalisation is characterised by increased connections and linkages between people, firms and markets located in different places (Cumbers & McKinnon, 2019). Through globalisation, there is a widespread flow of information, goods, services and people across national and continental boundaries. Friedman (2005) cited in Stangel (2011) believes that there are three phases of globalisation, namely: (1) globalisation 1.0, which spanned from the 15th to the 18th century, in which sea transport triggered social and economic development; (2) globalisation 2.0, which spanned from the 19th to the 20th Century, wherein railways and cars facilitated economic development; and (3) globalisation 3.0 being the last and the current stage, wherein telecommunication links i.e. Internet, mobile phones and air transport enable people to travel worldwide with ease. One salient aspect of the different forms of

globalisation is that technology, as well as evolution of the modes of transport, have a greater impact on social and economic development.

Furthermore, the concepts of location, space and distance help in conceptualising globalisation. Economic activities are connected across space through the flow of information, money, information and goods. Globalisation manifests itself in various forms such as social, political, cultural and economic terms. Economic globalisation has a greater impact on the flow of goods, services, money and information across the world. Cumbers and McKinnon (2019) define economic globalisation as a process of economic integration on a global scale and creating an increasingly close connection between people and firms located in different places.

Globalisation has transformed the way people view space and distance. According to Stangel (2011), a metropolitan area cannot be considered as a 'neighbour' to its surroundings in social and economic terms, as it might be closer to another metropolis located hundreds or thousands of kilometres away. Through globalisation, people and places located far away from each other are closer to each other in economic and social terms. The world has been brought close together, and distance is no longer an important factor in determining the location of manufacturing firms or any other economic activities across the geographic space. Air transport has brought the world together as manufacturing firms located in Cape Town, South Africa, for instance, may obtain their inputs from the firms located as far as China.

The Fourth Industrial Revolution (4IR) phenomenon considers the impact of the technological changes on human, economic and political development, and it affirms that technological change is the key driver of transformation for all industries (Philbeck & Davis, 2018; Schwab, 2017). The idea of 4IR also referred to as Industry '4.0' emerged in Germany between 2011 and 2015, and it focuses on the application of digital technology in manufacturing. According to Philbeck and Davis (2018), 4IR is an improvement from the digital information termed as the 'Third Industrial Revolution', which relied on the electricity and telecommunication systems from the "Second Industrial Revolution". One notable feature about the 4IR is that technologies, robotics, artificial intelligence, Internet of Things (IoT), drones and autonomous vehicles have been integrated into our social, physical and political spaces, thereby altering the behaviours and relationships (Philbeck & Davis, 2018).

The industrial revolutions are characterised by a change in technologies and these changes have an impact on the development of the manufacturing sector and other sectors. A point worth noting is that in each industrial revolution, certain types of technologies dominate and influence the means of production. In brief, the First Industrial Revolution first emerged in the United Kingdom in the 18th century, wherein the steam power and railroad brought in mechanical production (Schwab, 2017; Philbeck & Davis, 2018). In the Second Industrial Revolution which started in the late 19th century and spanned into 20th century, the advent of electricity has enabled mass production in industries. Furthermore, the Third Industrial Revolution, which started in the 1960s and is also referred to as the “digital revolution” enabled the flow of information through the advent of computers and the internet. The Third Industrial Revolution set up the infrastructure that has been incorporated in the 4IR.

The 4IR is crucial to the manufacturing sector, as the use of technologies, such as robotics and the Internet of Things increases productivity. As such, modern manufacturing firms highly depend on the existence of new technologies. Schwab (2017) is of the view that 4IR enables the virtual and physical systems of manufacturing across the world to cooperate in a flexible way. Additionally, the incorporation of the new technologies has increased the quality of products that are produced by the manufacturing firms, as well as speeding up the rate at which goods are being manufactured.

The 4IR will have both positive and negative impacts on the world’s economy. According to Schwab (2017), the 4IR will have a monumental impact on the global economy, in terms of investments, GDP, consumption, trade and inflation. In view of the above, the 4IR has transformed the ways in how manufacturing processes take place, as well as business and trade, are conducted across the world.

Against the background above, the thesis focuses on the institutional and spatial economic analysis of manufacturing firms, which are located close to airports in the contemporary economy characterised by 4IR and economic globalisation.

1.2 DEFINITION OF CONCEPTS

The section provides the definition of key terms that are used throughout the thesis. Although the key concepts are discussed further in Chapter Two, it is imperative to clarify the key terms that are integral to the thesis. The key terms defined below are airport-centric

development and airport-centric firms; manufacturing; linkages; agglomeration economies; clustering; and institutions.

1.2.1 Airport-centric development

Development on and around airports is referred to as airport-centric development, and the normative models, namely airport city, aerotropolis, aviopolis, aerea, airport corridor explains the distribution of various economic activities on and around airports. Airport-centric development is a type of development that is used to enhance the airport's non-aeronautical revenue and also intended to help the region economically by leveraging the presence of an airport (Boloukian & Siegmann, 2016). The land uses/ businesses found in close proximity to airports, such as warehousing, car rental, manufacturing, logistics, hotels and car hiring services are examples of airport-centric development, which are mainly non-aeronautical services that are subservient to the operations of airports. Furthermore, Mokhele (2016) defines airport-centric firms as the firms located: firstly, around the airports, i.e. within the geographical proximity (and of contiguous with) the airport, but outside the airport premises; secondly, on the airport land; and thirdly, within the airport's terminal. The airport-centric firms are integral to this thesis as the manufacturing firms form part of the units of analysis.

1.2.2 Manufacturing

It is important to understand the origin of the term manufacturing. According to Scallan (2003: 3), the word manufacturing was derived from the Latin words manus (meaning 'hand') and facere (meaning 'to make'), and the words were combined in Latin to form the word manufactus, meaning 'made by hand' or 'hand-made'. Manufacturing is thus defined as the process of physically transforming goods, and the physical transformation constitutes the traditional manufacturing activities such as moulding, cutting, and assembly (Levinson, 2017). In simple terms, DeGarmo et al. (1988) cited in Scallan (2003) define manufacturing as the "conversion of stuff into things". English Collins Dictionary (1988) defines manufacturing as processing or making (a product) from raw materials, especially as a large-scale operation using machinery. Expanding the definition of manufacturing from the English Collins Dictionary, Scallan (2003: 3) defines manufacturing as the making of products from raw materials using various processes, equipment, operations and manpower according to a detailed plan. Some schools of thought define manufacturing as the process of adding value, as the processed raw materials subsequently have market value.

1.2.3 Agglomeration economies

Guliano et al., (2019) define agglomeration economies as the external benefits firms receive from co-location. Agglomeration economies are defined by El Makhloufi (2013) as the externalities stemming from the interaction of agents across space that positively affects local productivity and growth. Parr (2002) defines agglomeration economies as the cost savings that result from the concentration of production at a given location. In addition, Parr (2000) classified agglomeration economies into two main forms, namely agglomeration internal to the firm and the agglomeration external to the firm. Internal economies of scale also known as horizontal integration indicate the fact the cost of production is a decreasing function of output. These are benefits that are derived from the increase in operations of a firm. Lateral integration is the diversification of production within a firm and these are referred to as internal economies of scope.

As discussed in the literature review (Chapter Two), localisation economies and urbanisation economies are forms of agglomeration economies external to the firm (Parr, 2002; Fan & Scott, 2003; El Makhloufi, 2013; Claver-Cortés, 2016). These are agglomeration economies that are dependent on the existence of other firms, where each firm has no control over the activities of other firms. Claver-Cortés (2016) defines urbanisation economies as the externalities derived from the concentration of the economic activities in a particular region. Informed by the concepts of agglomeration external to the firm, the study analysed forces that influenced the location of the manufacturing firms around Cape Town International Airport.

1.2.4 Clustering

The agglomeration economies eventually lead to the clustering of economic activities in geographical space. Porter (2000) defines a cluster as a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities. Clustering occurs in different scales and they are classified in different spatial categories, namely local/ urban, local/ regional, regional and global networks (Vleugel, 2005). As further noted by Porter (2000), clusters encompass an array of linked industries and other entities important to competition. Therefore, linkages are special attributes that enhance the clustering of economic activities located either within the same geographic space or in different locations.

1.2.5 Linkages

Linkages refer to the flows of information, materials/ or services between firms (El Makhoulfi, 2013, He & Zhu, 2016). Milner et al. (2006) note that the input-output linkages involve interdependencies between firms in their sales and purchases of intermediate products, and these transactions may take place within the same industries, referred to as intra-industry linkages and among the firms which are referred to as 'inter-industry linkages'. The concept of linkages is used by geographers and economists to describe the interdependence of firms. Firm/ industry linkages are classified into two main categories namely, backward and forward linkages. Backward linkages refer to the inputs in processing and the forward linkages are the links to the customers purchasing the products. Nakamura (2005) asserts that forward and backward linkages are mutually dependent as the downstream firms give a backward linkage to the upstream firms, while output growth in upstream firms may provide more efficient production via intermediate demand for downstream firms.

1.2.6 Institutions

Institutions are humanly defined constraints and enablers that structure political, economic and social interaction (North, 1990). Institutions consist of informal constraints such as customs, taboos, tradition and code of conduct and formal rules such as laws, property rights and constitution. Institutions set the rules of the game in a society that needs to be adhered to (North, 1990; Van Wilk, 2007). In addition, institutions are defined as rules and organisations, including informal norms that coordinate the human behaviour (World Bank Development Report, 2003). In this regard, institutions are not only the constraints, but they are also enablers of development. There are various forms of institutions, which include government agencies, firms, civic society organisations, police and courts.

Airport-centric development, like other forms of development, does not happen in a vacuum, and as such, the institutional environment set the tone for such development, at least in part (Mokhele, 2018a). With respect to Cape Town airport-centric, the location of manufacturing firms is largely influenced by the prevailing institutional environment as discussed in the subsequent sections.

1.3 RESEARCH PROBLEM

Typified by airport city and aerotropolis, models of airport-led development are becoming policy and planning bandwagons employed across the world (Mokhele, 2018a). Despite the

growing popularity of the models, numerous airports worldwide have failed to transition towards the so-called airport cities (Peneda et al., 2011) or other idealised spatial forms of airport-related development.

The aforementioned failure raises the question on whether planners and policy makers comprehensively understand forces that drive development around airports. Literature on factors that influence the location of economic activities in the vicinity of airports can be categorised into two main sets, namely spatial economic factors (Stangel, 2011; Freestone & Barker, 2011; Appold & Kasarda, 2013; Hoare, 1974; Wang et al., 2020; Callanan, 2016; Kasarda, 2010) and institutional factors (Mokhele, 2018a; Van Wilk, 2008; Van Boxtel & Huys, 2005). A point worth noting is that the spatial economic driving forces and institutional factors that influence airport-related development are intertwined, hence research should not approach them as separate categories. In this light, despite a few studies that integrate the analysis of spatial economic and institutional factors (see Van Wilk, 2007; de Jong, Suau-Sanchez & Dross, 2008), extension is required to the literature that integrates the varied driving forces. This is the extension that the thesis intends to contribute towards.

Furthermore, the existing literature around airport-related development is not sector-specific, as it focuses on the impact of spatial economic driving forces and institutional landscape on various economic activities. Mokhele (2016) argues that with regard to studies that analyse diverse economic activities, different insights cannot be sufficiently discerned because the research instruments (e.g. questionnaire) used have to be uniformly applicable to all sampled firms in diverse economic sectors. As noted in Section 1.1, the manufacturing sector is one of the potential drivers of the economy, and as such, it is imperative to explore the nexus between manufacturing firms and air transport infrastructure towards unpacking the underlying linkages and driving forces. Some scholars have indeed argued that, historically, empirical research has not been proportionate to the importance of the location of industrial activities in urban areas (Struyk & James, 1975).

It is against this backdrop that the proposed research seeks to provide an empirical analysis of how institutional and spatial economic factors influence the location of manufacturing firms on and around airports.

1.4 RESEARCH AIM, QUESTIONS AND OBJECTIVES

1.4.1 Research aim

Towards addressing the aforementioned research problem, the aim of the study is to analyse the influence of institutional and spatial economic factors on the location of manufacturing firms in the vicinity of Cape Town International Airport in South Africa. It is hoped that the findings of the study would provide input into guidelines that are used by planners and policymakers to promote and guide the location of manufacturing establishments in the vicinity of airports.

1.4.2 Research questions

The research aim stated above led to the formulation of the following research questions, which are consequently used to delimit the thesis.

1. What is the mix of manufacturing firms located on and around Cape Town International Airport?
2. What is the relationship between manufacturing firms on and around Cape Town International Airport with the airport and firms at municipal, provincial, national and international scales?
3. How do spatial economic factors influence the location choices of manufacturing firms on and around Cape Town International Airport?
4. What is the role played by the public and private institutions in facilitating the location of manufacturing firms on and around Cape Town International Airport?

1.4.3 Research objectives

In view of the aforementioned research questions, the specific research objectives are as follows:

1. To establish the types / composition of the manufacturing firms located on and around Cape Town International Airport.
2. To analyse the relationship between manufacturing firms and other firms on and around Cape Town International Airport and with firms located at municipal, provincial, national and international scales.
3. To analyse the influence of spatial economic factors on the location of manufacturing firms on and around Cape Town International Airport.

4. To establish the role of relevant institutions in facilitating the location of manufacturing firms on and around Cape Town International Airport.

1.5 SIGNIFICANCE AND LIMITATIONS OF THE STUDY

1.5.1 Significance

The quest to comprehensively understand the driving forces of manufacturing firms located around airports (i.e. as components of airport-centric development) has prompted the undertaking of this research. The research thus contributes towards an understanding of the driving forces on airport centric development, as well as expanding the existing knowledge on airport-centric development, especially on institutional and spatial economic driving forces that facilitate the location of manufacturing firms in the vicinity of airports. Informed by growth pole theory, the thesis provides a foundation for future studies to contribute towards a theoretical framework for analysing the institutional and spatial economic forces that drive the location of manufacturing firms on and around airports. Additionally, the research unpacks the spatial-economic factors that influence the location of the manufacturing firms around Cape Town International Airport, as it believed that these factors vary from one airport to another.

Similar research on the influence of the institutional landscape on the location airport-centric development has been conducted in South Africa. For instance, Mokhele (2018a) analysed the influence of the institutional landscape on the implementation of the normative models of airport-centric development around Bram Fischer International Airport.

1.5.2 Limitations

In light of the COVID-19 related regulations, access to the respondents (firm representatives and officials) was difficult. Some of the identified respondents were not available for the face-to-face interviews and were contacted telephonically or through virtual meetings. It should be noted the dates for telephonic and virtual interviews were booked in advance with the respondents who confirmed that they were not available for the face-to-face interviews. The COVID-19 restrictions and regulations affected the time required for the data collection and mixed methods data collection methods were employed.

Another limitation that was encountered by the researcher during the data collection is that the respondents were not willing to disclose some information of the firms located around the

airport. The researcher did not coerce/ force the respondents to disclose the information they considered sensitive. Additionally, some of the respondents refused to participate in the research as access to private information was considered a violation of the Protection of Personal Information Act. The research findings are based on the responses obtained from the participants who voluntarily participated in both qualitative and survey interviews conducted.

1.6 ORGANISATION OF THE THESIS

As graphically depicted in Figure 1.1, the thesis consists of six chapters, which are summarised as follows:

Chapter One provides the introduction, background to the study, statement of the research problem, research aim, questions, objectives, definition of key concepts, significance of study and limitations that characterised the study.

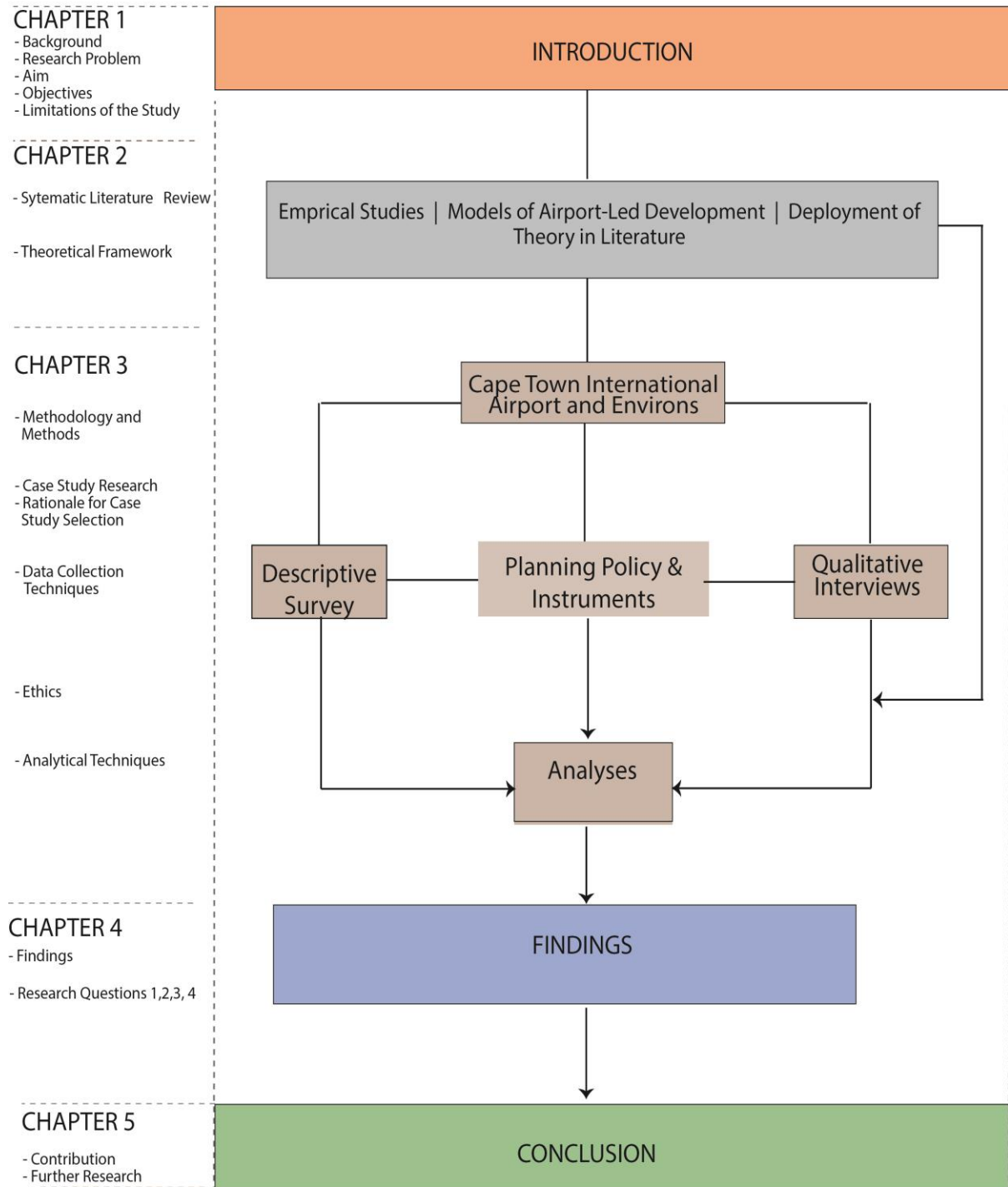
Chapter Two reviews the literature in an attempt to address the research questions and also identify gaps in existing knowledge. Additionally, key concepts relating to airport-centric development are expounded on in details. A conceptual and theoretical framework informing the analysis of airport-centric development is also discussed in Chapter Two .

Chapter Three presents the research methodology and methods employed in the study. A case study is adopted as the main research approach, which is centred on the case study of the environs of Cape Town International Airport in South Africa. The chapter also details the methods used to collect and analyse data towards answering the research questions.

Chapter Four presents the findings of the analysis conducted in addressing the research objectives and questions presented in Chapter One.

Chapter Six concludes the thesis and discusses the extent to which the questions and objectives were addressed.

Figure 1. 1: Study Outline



Source: adapted from Mokhele, 2016

CHAPTER 2: LITERATURE REVIEW

The previous chapter introduced the thesis and presented, among others, the research problem, aim and objectives. The current chapter presents a review of the literature relating to airport-related development, as well theories and models pertaining to airport-related development. Literature on airport-related development was obtained from the published books, journals, articles, government publications and company publications. The journals on the disciplines of transport and logistics, supply chain management, economic geography and town planning were obtained from the Cape Peninsula University of Technology (CPUT) library, Google books and e-library website (e-library.org), Academia and Research Gate. Keywords relating to airport-related development such as airport city, aerotropolis, airport corridor, area, agglomeration economies and clustering were used to search relevant literature from the aforementioned sources. The chapter is organised around seven sections as follows. Section 2.1 overviews the taxonomy of literature, which include institutional arrangements; international case studies; and policies that influence airport-centric development in South Africa. Section 2.2 discusses the spatial economic driving forces. Section 2.3 discusses the composition of land uses around airports; and Section 2.4 discusses the measurement of airport economic impact. Section 2.5 discusses the normative models of airport-led development and Section 2.6 focuses on the conceptual and theoretical framework appropriate to the analysis of airport-centric developments. Section 2.7 synthesises and summarises the chapter.

2.1 TAXONOMY OF LITERATURE

Literature was grouped into three main themes, which include the impact of institutional arrangements on airport-related development; spatial economic driving forces of airport-related development and economic impacts of the airport-related development. A point worth noting is that some of the themes overlap. As discussed hereunder, the subsequent sections explore the aforementioned themes in detail.

2.1.1 Institutional arrangements on airport-related development

As discussed in Chapter One in Section 1.2.6, it is imperative to demystify the term ‘institution’ to have a better understanding of different forms of institutions that impact social and economic development. Institutions are humanly defined constraints that structure political, economic and social interaction (North, 1990). Institutions consist of informal constraints such as customs, taboos, tradition and code of conduct and formal structures such as laws, property rights and constitution. For the purpose of this study, only formal institutions are considered. Institutions set the rules of the game in a society that need to be adhered to (North, 1990; Van Wilk, 2007). It is worth noting that institutions directly affect airport-related development, as they set the tone for development. Therefore, the institutional landscape/ environment has a bearing in shaping airport-led development as it will inhibit or facilitate airport-related development. Van Wijk (2007) notes that there are four main institutional groups, namely socio-cultural, financial, economic, governance and legal institution.

According to World Bank (2003), institutions are rules, organisations and social norms that enables human coordination. In contrast to North (1990) and Van Wilk (2007), conceptualisation of institutions, it should be noted that institutions do not only set the constraints but are also enablers of human development. The formal institutions in the form of regulations, laws, constitution, government agencies, civic organisations, firms and courts play an important role in shaping the development of the manufacturing firms within a geographic space. The subsequent sections analyse the roles of formal institutions (rules, laws and policies) that influence the location of the manufacturing firms around the airport.

2.1.2 International case studies

In the case of Schiphol International Airport in the Netherlands, the institutional landscape permits both public and private actors to have control over development within airport environs. Gualini (2001) cited in Van Wijk (2008) articulates that policymaking and implementation in the city regions and particularly in airport regions are characterised by interaction, bargaining, negotiation, and entrepreneurship. As regards institutional arrangements around Schiphol international Airport, Van Boxtel & Huys (2005) note that decision making regarding the development of the airport has been a controversial process since the 1960s. The involvement of different stakeholders with different interests has a greater impact on the decision-making process. Van Wijk (2008) asserts that the province of

North Holland has a mediating and coordinating role between the local and national governments, and private and public interests. Additionally, North Holland province supervises the land-use plans that should align with regional land use plans and enforce strict zoning regulations prioritising airport-related development, namely land uses for offices and industrial sites (Van Wijk, 2008). More importantly is to note that strict zoning, as well as prioritising the so-called ‘airport-related land were enforced to protect Schiphol Airport from traffic congestion. The existing legislation is there to ensure that new urban development within airport environs will not have any impact on the natural environment.

Furthermore, the provincial planning agency and provincial planning deputy also have a mandate and active development roles regarding airport-related development around Schiphol International Airport (Van Wijk, 2008). Their roles are mainly on a cooperative basis with the municipalities of Amsterdam and Haarlemmermeer, which is the municipality the airport is located. To promote airport-related development, these public actors coordinate land supply for industrial and office development in the so-called Bestuursforum Schiphol (BFS) region (Van Wijk, 2008). As regards the case of the Netherlands, the land is publicly owned, and coordination of land supply is required to avoid inter-municipal competition (Jansen, 2007 cited in Van Wijk, 2008).

In 1987 a government-owned company - Schiphol Area Development Company (SADC) was established and had the responsibility for the land supply, and planning airport business parks around the airport territory and admitting airport-related companies in its business parks. It was not responsible for real estate development around the airport premise, as private real estate developers, namely Schiphol Real Estate AMB and Pro-Logis oversee the real estate developments. According to Van Wilk (2008), the regional, local government and Schiphol Group, monitor and coordinate land supply and ensure that the land supply matches with the demand for industrial and office development.

In light of the above, the existing institutional framework for the Schiphol Airport region is there to enforce regulations regarding airport-related development. These public institutions give first preference to ‘airport related’ land uses at the expense of other non-aviation related land uses. By promoting industrial land use development within airport environs, the existing legislative environment creates a conducive environment for the location of manufacturing firms within the airport environs. Coordination of public and private stakeholders has

promoted airport-related development within the proximity of Schiphol international airport (Van Wijk, 2008).

According to Van Wijk (2007), in Germany only the federal ministry of Transport, Construction and Housing is directly involved in spatial planning of airport areas in the Frankfurt Rhein-Main city-region. The sphere of influence of the airport on regional development in Frankfurt Rhein-Main stretches out over the states of Hesse, Bavaria, and Rhineland-Palatinate. The airport is located at the border of the territory of the 'independent' city of Frankfurt; a government state of Hesse is the main actor responsible for airport expansion (Van Wijk, 2008). In contrast to regional planning within the Schiphol airport region which mainly focus on land use regulations and coordinating land demand and land supply, the Ministry of Transport and Construction in the Frankfurt Rhein-Main region facilitates spatial-economic development by infrastructure investments and facilitating project developers (Van Wijk, 2008). As spatial development around Frankfurt airport depends on the availability of infrastructure, Rhein-Main Verkehrsverbund (RMV) regional transport authority has the responsibility for the regional transport in the region. Furthermore, various local and regional governments are shareholders of RMV, and the municipalities oversee the local transportation.

In the case of Frankfurt International Airport, the direct RMV's involvement in the airport-related development is found with the plans for the regional tangents that connect the airport in a more polycentric pattern with towns and villages west and east of the airport (Van Wijk, 2007). However, the managers of RMV argued that there is a mismatch between the development of new business parks and industrial sites with the expansion of new transport infrastructure. Accordingly, there is a need for coordination of various stakeholders to provide adequate transport infrastructure for new development. In light of the above, the existence of reliable infrastructure facilitates the development of new business parks and industrial sites within the airport environs.

Government policies influence industrial location within the vicinity of an airport. A case in point is the directive role played by the central governments in most of the East Asian Countries in setting up export processing zones and other local development schemes (Fan et al., 2003). The establishment of Airport Economic Zones (AEZs) has been employed by the government of China to attract investment within the airport environs (Wang et al., 2020).

Airport Economic Zones (AEZs) are defined as suburban areas whose infrastructure, land use, and economy are centred on the airport (Wang et al., 2020). Therefore, these are precincts where aviation-oriented firms and other firms which indirectly benefit from the airports are located. More importantly, it is to note that Airport Economic Zones are not a new phenomenon as they emerged in the late 1950s. In 1959, Shannon Free Economic Zone was established around Shannon International Airport in Ireland as the pioneer Airport Economic Zone (Soulsby, 1965 cited in Wang et al., 2020).

In the context of China AEZs is part of the central government policy to promote industrial location in close vicinity to airports. Wang et al. (2020) articulate that in 2013 the Zhengzhou Airport Economic Comprehensive Experimental Zone was established as a “National New Zone and marked the rise of Airport Economic Zones development into a national strategy”. According to Moberg (2015) cited in Wang et al. (2020), central and local government policies have a greater influence on industrial location within AEZs, as these policies promote the development of certain industries within the AEZs through tax reduction, financial subsidies, investment incentives, land acquisition and procedure simplification. Therefore, the financial policy instruments play a crucial role in shaping the built environment around airports as they attract both aviation-oriented firms and non-aviation centred firms to be located on AEZs.

2.1.3 Policies influencing airport-centric development

In South Africa, national, provincial and local policies play a crucial role in the regulation of the land uses on and around the airports. At the national level, government policies influence the location of the airports and the land uses on and around the airports. For instance, the Government of South Africa Civil Aviation Policy (2017) acknowledges that an airport is a modal transfer facility and significant to land; and the airports with high activity levels have a significant impact on the transport system and land uses in their vicinity. Additionally, the policy stipulates that there should be a balance between airport planning and the surrounding environment in the following aspects: (1) transport planning needs to be done at the local level to complement the existing land uses, (2) consider the benefits that the local communities will gain from an airport and (3) need to enhance the sustainability of the airport by integrating aeronautical and non-aeronautical activities (Civil Aviation Policy, 2017). In this regard, careful consideration needs to be made on the existing land uses as well as the transport infrastructure on and around the airport precinct. It has been pointed out that

problem arises when airports are planned in isolation of the existing development, and when airports are planned without taking into consideration the municipal laws relating to where an airport is planned. As further noted in the Civil Aviation Policy (2017), for airport-centric development such as aerotropolis and airport cities to be viable, special attention with regards to the local economic development must be considered.

2.1.3.1 Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA)

Spatial Planning and Land Use Management Act is a national policy that provides a framework for spatial planning and land use management in South Africa (Republic of Africa Africa, 2013). The policy classifies spatial planning into three main categories, namely, municipal planning, provincial planning and national planning. For instance, the purpose of the policy at a municipal level is for the compilation, approval and review of the integrated development plans, and at the provincial level, the purpose of the policy is to guide the approval and review of the spatial development framework (Republic of South Africa, 2013). Furthermore, the policy is also used to monitor spatial development at the national level as it also guides the compilation, approval and review of spatial dedevelopment at the national level. There are five development principles that are set out in SPLUMA and these include, the principle of spatial justice, the principle of spatial sustainability, spatial efficiency, the principle of spatial resilience and the principle of good administration. It should be noted that the aforementioned principles apply to spatial planning, land-use management and land development. The Act is integral in guiding airport centric development as the newly established firms in geographic proximity of an airport must adhere to some of the development principles set out in the policy. It can be commented that some of the development principles, namely, spatial resilience, spatial sustainability and spatial efficiency. Clustering of the manufacturing firms around the airports enhances efficient and optimum utilisation of the available infrastructure, such as the airport and the road network. Therefore, the Act is instrumental in the location, as well spatial distribution of the manufacturing firms around the airports.

2.1.3.2 Cape Town Municipal Spatial Development Framework (CTSDF), 2018

According to the City of Cape Town (2018), the overall aim of the spatial development framework is to “guide and manage urban growth, and to balance competing land-use demands, by putting in place a long-term, logical development path that will shape the spatial

form and structure of Cape Town”. In addition, the CTSDF is a long term (± 20 year plan), to manage the growth and change in Cape Town. The CTSDF identifies Cape Town International Airport as one of the major regional infrastructures, and the demand for supporting landside infrastructure is increasing as the airport becomes busier. In addition, one of the policystatementst is to support the development of an integrated system of airports and appropriate surrounding land uses. With regards to the spatial location of manufacturing firms, the CTSDF acknowledges that manufacturing is declining in centrally located industrial areas and is being replaced by wholesale and retail facilities. Given the height restrictions imposed on developments permitted around the airport, any new proposed development must comply with the height restriction required in the area. Therefore, the CTSDF is an important planning instrument that guides the spatial distribution of the manufacturing firms in the immediate surroundings of Cape Town International Airport.

2.1.3.3 Tygerberg District Plan, 2012

The district plans are also important legislation in guiding urban development. In the case of the Cape Town Metropolitan region (City of Cape Town, 2012) is one of the district policies put in place to guide spatial and economic development within the environs of Cape Town International Airport. As noted by the City of Cape Town (2012), Cape Town International Airport precinct is a major significant economic distributor in the district and is also a major focal point for freight, logistic, commercial, and industrial activities among others. The correlation between air transport infrastructure and manufacturing firms is noticed in the location of various firms from the manufacturing sector and transport and logistics in the vicinity of Cape Town International Airport.

2.2 SPATIAL ECONOMIC DRIVING FORCES

Apart from the institutional and legislative environment, spatial economic factors influence airport centric development, as such, it is imperative to analyse how spatial economic forces influence airport-related development in particular the location of manufacturing firms. The concepts of agglomeration, linkages and clustering have been considered in analysing the distribution of economic activities within a geographical and economic space.

Concerning spatial economic driving forces of airport centric development, El Makhloufi (2013) asserts that agglomeration economies have a greater impact on the spatial distribution of economic activities. According to El Makhloufi (2013: 45), agglomeration economies refer

to the externalities stemming from the interaction of agents across space that positively affects local productivity and growth. More importantly, agglomeration economies enhance the spatial concentration of economic activities. Fan et al. (2003) and El Makhloufi (2013) grouped agglomeration effects into two main broad categories, namely localisation economies and urbanisation economies. Localisation economies are efficiency-boosting phenomena that come from the clustering of firms in each sector, and urbanisation economies are efficiencies that arise from the agglomeration of various kinds of economic activities in a given region (Fan et al., 2003). The normative models of airport-related development have been largely influenced by the notion of agglomeration economies, as the aerotropolis concept is not influenced by the resource location (Charles et al., 2007).

There are positive externalities associated with agglomeration economies; these include lowering transaction and coordination costs referred to as localisation externalities and the externalities of urban scale (urbanisation externalities). Scott (1988) cited in El Makhloufi (2013) is of the view that the proximity of firms to other activities is crucial to industrial growth. For instance, the geographical proximity of manufacturing firms to logistic firms in the vicinity of airports can be one of the driving forces of the locational choices of manufacturing industries found on and around airports.

Mokhele (2018b) asserts that linkages are required for the realisation of agglomeration economies, as well as economies of dispersion. Linkages literary refers to the flows of information, materials and/or services between firms and flows within a firm (El Makhloufi, 2013; Mokhele, 2018b). There are two broad categories of firm linkages which entails backward and forward linkages. Backward linkages in a firm provide goods and services as input for its activities or output, and forward linkages provide links with customers purchasing its products or services. A survey of manufacturing firms and offices located around Heathrow International Airport in the United Kingdom done by Hoare in 1969 revealed that firms located within the vicinity of airport environments may have direct and indirect linkages with the airport. Direct linkages refer to the firms serving the airport and airport transport such as air freight agents, hotels and building maintenance, whilst indirect linkages relate to firms located close to the airport for easy accessibility to the airport. A point worth noting is that linkages determine the interaction between firms located within a particular place.

Furthermore, the existence of linkages results in the development of clusters, namely spatial clusters and organisational clusters. The former refers to the linkages that exist on firms located in the same geographical area, and the latter refers to the linkages that exist on firms regardless of their geographical proximity (Mokhele, 2018b). Porter (1998) cited in El Makhloufi (2013) defines clusters as geographic concentrations of interconnected companies and institutions in a particular field. Coetzee and Swanepoel (2017) are of the view that the presents of an international hub airport can be considered as a desirable location for airport-related businesses, which can be referred to as clusters. However, the definition of clustering is not sufficient as it envisions the concept of clustering in geographic terms, whereas clusters may also occur to firms without any geographical relationship. It should be noted that spatial clustering put much emphasis on the spatial proximity of firms, intensive relations in networks, externalities, and non-market relations whilst proximity can be either geographical or economic proximity.

In light of the above, spatial economic factors play a crucial role in shaping airport-related development. For instance, the spatial clusters of communication firms found within the vicinity of Hartsfield International Airport in the United States of America, and the spatial industrial clusters of financial, computer and electronic firms were dominant clusters around Dallas Fort Worth Airport, in the United States of America (Prosperi, 2007). As noted by Mokhele (2018b), the developments around Cape Town International Airport and OR Tambo International Airport are spatial clusters and are also linked to other Airports in South Africa and beyond.

Moreover, the nature of the manufacturing firms, in particular the scale, as well the linkages with other sectors/firms are among the driving forces for the location of manufacturing firms in the vicinity of airports. A survey of over 120 firms from Singapore, Penang, Kuala Lumpur, and Manila done by Bowen and Leinbach (2004) revealed that the high-value-weight ratio is one of the factors that strongly affect the propensity of goods to be transported by air compared to alternative modes of transport. Additionally, their study revealed that most of the electronic manufacturing firms in the Philippines, Malaysia and Singapore are internationalised as depicted by the distances from which raw materials and finished products are transported. For instance, most of the finished electronic goods in Asia are exported to the United States of America or Europe and they obtain the raw materials from either America or Europe. In this regard, the scale, nature of products and the connections that may exist

between local and international firms determine the locational choices of manufacturing firms.

2.3 COMPOSITION OF LAND USES AROUND AIRPORTS

Prosperi (2007) deployed a multi-scalar research design on the study of the economic activity mix of three international airports in the United States of America, namely Hartsfield International Airport in Atlanta, Dallas Fort Worth and Memphis International Airport. The research was meant to give clarity on whether the economic activities around the airports clusters or concentrations of the economic activities. It was found out that transport and communication firms were spatial economic clusters around Hartsfield International Airport, and spatial industrial clusters of financial, computer and electronic firms were dominant industrial clusters around Dallas Fort Worth Airport (Prosperi, 2007). A location quotient was employed in determining the spatial distribution of firms around the airports within Dallas, Atlanta and Memphis metropolitan regions. It should be noted that although Memphis Airport is surrounded by varied landuses which, among others, include the transport and logistic firms, offices, health care firms, computer and office machine repair and maintenance and manufacturing firms, Prosperi (2007) maintains that there are few manufacturing firms around Memphis Airport, as there is a brewery and paper coated manufacturer found around the airport. The spatial clusters around Dallas Fort Worth Airport and Memphis Airport had higher location quotients relative to the spatial distribution of firms in the broader region.

Mokhele (2018b) analysed the mix of airport centric developments around O.R. Tambo and Cape Town International Airports, as well as the linkages between the firms within the two airports and the linkages the firms have with the metropolitan, regional, national and international context. According to Mokhele (2018b), in 2014 a total of 1629 firms were recorded at the O.R. Tambo airport centric development, and it was dominated by wholesale and retail trade firms, followed by transportation and storage firms. Similarly, 461 firms were recorded around Cape Town airport and wholesale, retail trade firms, followed by transportation and storage firms, dominated the mix of airport-centric development (Mokhele, 2018b). Furthermore, the study analysed the firm sizes to understand whether the airports possess propulsive elements. The findings depict that O.R. Tambo and Cape Town International Airports are significant forces of attraction as they attracted the transport-oriented firms within their vicinity. In respect to the composition of land uses around the

airport, the study is useful as it analyses the distribution of land uses around the airports and the reasons why some firms choose to be located in geographic proximity to the airport.

2.4 MEASUREMENT OF AIRPORT ECONOMIC IMPACTS

It is essential to analyse the economic impacts of the airports on the broader surrounding areas, either at local, regional, national and international levels. As noted by Karlsson et al. (2008), three main methods of analysing the aviation economic impacts which include the Input-output method, collection of benefits methods and catalytic method are widely used. According to Karlsson et al. (2008), the Input-output methods and the collection of benefit methods are regarded as the traditional methods, whereas the catalytic method is viewed as the newer method of analysing the economic impacts of the airports.

The Input-output methods employ the approaches that measure the direct, indirect and induced effects of airports (Karlsson, 2008). Direct effects refer to the number of jobs, flights and cargo generated directly by the airport whereas the indirect impact relates to the employment and output generated by firms primarily off-airport, but whose activities are attributable to the airport. As further noted by Karlsson et al. (2008), the induced effects are the multiplier effects caused by successive rounds of spending throughout the economy as a result of an airport's direct and indirect effects. Therefore, the induced effects relate to the spillover effect to the broader economy resulting from the businesses that have direct and indirect linkages to the airports.

As regards the collection of benefits methods, these are qualitative and quantitative methods emanating from the airport (Karlsson et al., 2008). For instance, the benefits brought about by the existence of an airport include employment creation, time saved from using the airport, stimulation of the business growth, recreation facilities and commercial land uses. It should be noted the benefits stemming from the clustering of various land uses close to the airport inform the policymakers or the airport operators in analysing the economic impacts of the airports.

As noted earlier, the catalytic method is considered to be the latest method of analysing the economic effects of airports. Karlsson et al. (2008) assert that the catalytic method analyses the spillover effects of the airport benefits on the investment, trade and the overall economy and are usually quantified in monetary terms.

It should be noted that airport economic impacts are done by the agencies, as well as the airport operators and managers to demonstrate the importance of the airport, persuade policymakers to airports against adjacent incompatible uses and persuade the businesses or investments that would add vitality to the regional interest (Karlsson et al., 2008). Employment, payroll and output are widely used variables or indices used to analyse the economic impacts of airports (Karlsson et al., 2008; Mokhele, 2016). It is of paramount importance to understand the methods, as well as the indices used to analyse the economic benefits of the airport. The subsequent section provides the specific cases of the airports and the economic effects of the airports to the adjoining areas.

2.4.1 Business types around airports

Airports as transport infrastructures have the potential of transforming the urban environment in their vicinity. They have become major employment centres as various land uses concentrated around the airport have attracted a substantial amount of labour force. Callanan (2016) analysed the economic impacts of the Brisbane Airport in Queensland State in Australia and Dubai International Airport in the United Arab Emirates on the urban growth and distribution of economic activities. According to Callanan (2016), Brisbane airport has grown to encompass 80,000 square metres of office space, operates 430 businesses and had an employee population of 21 000 within the airport and precinct in 2015. Similarly, in 2014, Oxford Economic Report determined that Dubai International Airport contributed 27% of Dubai's GDP and supported 416 500 jobs, which constitute about 21% of the total employment of Dubai. (Dubai Airport, 2015 cited in Callanan, 2016). In light of the above, the study reveals that airports apart from serving as transport hubs are employment centres and can attract a number of economic activities within their immediate vicinity.

Airports as transport infrastructure play an important role in regional economic development. Percoco (2010) used 2002 data to analyse the economic impact of 35 major Italian airports located in 103 provinces and their surrounding environment. The study revealed that some Italian airports have spatial spillovers as they serve the contiguous provinces. Three dependent variables were the definitions of employment, namely employment in the province, employment in the manufacturing sector and employment in the service sector. The hypothesis was premised on the fact that airport activity in terms of airline traffic has a larger impact on the service sector than other sectors (Percoco, 2010). The empirical results

revealed that the elasticity of service sector employment to airline traffic was about 0.056, and the findings indeed confirm that airports are key factors in local economic development. Furthermore, airports have a greater influence on the economic development of cities across the world as they influence the concentration of various economic activities within their surroundings. Callanan (2016) asserts that manufacturing is now considered as a global activity, as goods are being freighted quickly and efficiently around the world. As such, tonnes and tonnes of the manufactured goods are being freighted across the world through freight infrastructure.

Furthermore, Ayuntamiento-Madrid (2013) cited in Díez-Pisonero (2019) asserts that Adolfo Suarez-Madrid Barajas (ASMB) airport is one of the economic engines in Madrid the Spanish capital as it not only generates 57 500 direct/indirect/induced jobs but also contributes to over 10% of the Madrid region's GDP. Since its establishment in 1928, the airport territory has intensified its polarisation effect as it attracted several land-uses, namely residential uses, commercial uses and industrial activities (Díez-Pisonero, 2019). Just like other European and Asian major airports, ASMB airport attracted high-tech industries and knowledge-based activities within its surroundings. Commission on Strategic Development Executive Committee, (2007) classified high tech industries as science-based industries that manufacture goods while performing above-average levels of Research and Development (R&D), and these industries encompass aerospace, pharmaceuticals, computers and office machinery, communication equipment, and scientific (medical, precision, and optical) instruments.

Coetzee and Swanepoel (2017) note that OR Tambo International Airport (ORTIA) in Gauteng Province in South Africa has a greater impact on the location of various airport-related businesses in its surroundings. An inclination factor was employed to determine the density of businesses/land use in the locality of the airport. The inclination factor is derived from dividing the business density within the 2km-5km band from the airport by the average business density for the specific business category. A high inclination factor reflects that the business is attracted by the airport and a low inclination factor reflects that the airport has a low impact on the businesses in its locality.

As further noted by Coetzee and Swanepoel (2017), airfreight-related businesses were grouped into the following main groups: air cargo business, freight forwarding businesses,

courier businesses, transport consulting businesses, shipping businesses, warehouse businesses, container service businesses, and import and export businesses around OR Tambo International Airport. Additionally, non-freight-related businesses such as hotels, bed and breakfast establishments and guest houses were also mapped. However, air cargo related businesses had an inclination factor of 23.2 and among all the businesses it has the highest inclination factor within the 2 km – 5 km band from the airport. The findings conclude that air cargo related business had the highest inclination factor towards the airport, followed by courier services, freight forwarding, container services and logistic firms. In light of the above, it can be noted that some airports are transport and logistics hubs, as evidenced by the clustering of logistics firms within the geographical proximity of OR Tambo International Airport, South Africa.

The study that was conducted by Mokhele (2018b), regarding the spatial economic attributes of Cape Town International Airport and OR Tambo International Airport reveals that in 2016 they were 347 manufacturing firms that were located on and around OR Tambo International Airport and 53 manufacturing firms that were located on and around Cape Town International Airport. Additionally, the Cape Town International Airport environs and OR Tambo International Airport are surrounded with substantial amount of the economic activities, as they were 461 firms that were located around Cape Town International Airport and 1 387 firms were located around OR Tambo International Airport, (Mokhele, 2018b). Although both Cape Town International Airport and OR Tambo attracts varied land uses, the manufacturing firms located in the geographic proximity of the airports are few as compared to other economic activities.

2.5 NORMATIVE MODELS OF AIRPORT-CENTRIC DEVELOPMENT

The normative models of airport centric development ought to give an idealised spatial form for the airport-centric development. According to Freestone and Baker (2011), airport-centred development can occur across a spectrum of scales from the immediate fringe through to the metropolitan region. As such, the six normative models of airport-related development, namely airfront, decoplex, airport city, aerotropolis, airport corridor and aerea describe the scale and the leading actors. As further noted by Freestone and Baker (2011), the aforementioned normative models of airport-centred development vary in sophistication betraying a variety of origins in business strategies, planning organisations, and urban research. However, although the models of airport centric development describe the idealised

spatial form of the airport, it should be noted that not all models explain in detail the spatial location of the manufacturing in relation to the airport. The models explain the distribution of various landuses around around the airport precincts.

Table 2. 1: Summary of normative models of airport-related development

Model (s)	Definition	Location	Lead Actors	Key scholars	Example (s)
Airfront	Airport-related commercial zone	Airport fringe	Local community. private–public partnerships	Blanton (2004)	Metropolitan airports
Decoplex	New airport community in a regional setting	Regional setting	Master developer	Conway (1993)	Large-scale fly-in communities
Airport city	Planned mixed-use development of airport site	Airport land	Airport owner-lessee	Guller and Guller (2003)	Schiphol
Airport corridor	Coordinated provision of infrastructure and commercial development	Airport-CBD axis	Private developers; public infrastructure authorities	Schaafsma, Amkreutz, and Guller (2008)	Zurich
Aerotropolis	Time-sensitive metropolitan scatter of airport-oriented uses	Airport centred metro	Private market	Kasarda (2000a)	Dallas-Fort Worth
Airea	Discrete spatial clusters of airport-related development	Metropolitan subregion	Private market	Schlaak (2010)	Denver

Source: adapted from Freestone and Baker, 2011

2.5.1 Airfront

Airfront denotes a land-use mix of commercial, industrial, and transportation facilities and services intrinsically tied to the airport (Blanton, 2004). Freestone and Baker (2011) assert the airfront is characterised by a land-use mix of the airport fringe include car rental facilities, hotels and meeting facilities, freight and cargo services, manufacturing, and warehousing, which all frequently depend on the airport. The grouping of businesses closer to the airport

can be referred to as an air front. For instance, in Washington's Puget Sound region, the Snohomish County airport located in Everett has 55 businesses which created about 45 000 jobs (Blanton, 2004). In light of the above, the airfront model describes airport-related development at the microscale as it only focuses on the development closer to the airport.

2.5.2 Airport City

Stangel (2011) describes the airport city model as clustering functions that extend beyond the airport terminal and the landside zone. According to Guller and Guller (2003), an airport city is more of a dense cluster of airport-related, business, and other commercial development, and the clustering of economic activities close to the airport. The zones which may cluster around the airport terminal entails transportation facilities, bus stations, train facilities, hotels, offices, shopping malls and business parks. Airports have shaped new urban forms, and in functional terms, they have emerged to be intermodal nodes that have morphed into multi-faceted business enterprises to enhance mixed-use activity centres, corridors, and zones (Freestone & Barker, 2011). It has been argued that an airport city is a typical real estate development that is mainly planned by the airport authorities or other planning institutions relating to the airport.

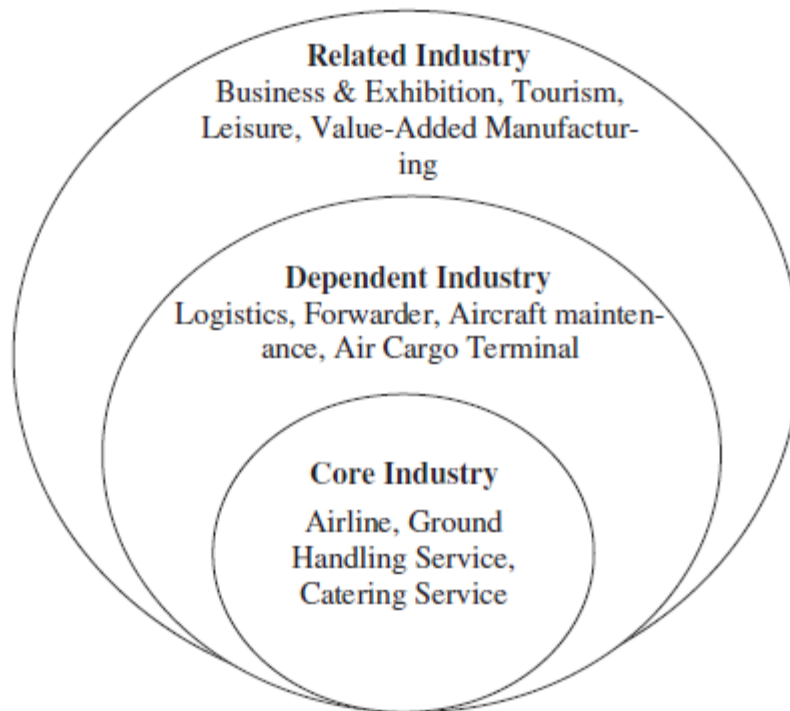
The Airport City concept promotes the development of the manufacturing firms in its vicinity as some of the non-aeronautical uses. In its spatial form, airport cities are urban forms that consist of an airport and are surrounded by the light manufacturing industries, offices space, mixed business uses, hotel accommodations, restaurants, entertainment facilities and residential uses. Shah and Sanjeevan (2013) posit that an airport city is an economic hub extending from the airport and it consists of the distribution centres, office buildings, light manufacturing firms, convention centres and the and the hotels that are linked to the airport by road. Furthermore, the literature indicates that airport cities attract time-sensitive manufacturing activities (Stangel, 2011; Kasarda, 2012; Shah & Sanjeevan, 2013). The industrial zones are part of the non-aeronautical functions that form part of the airport city, and a case in point is of Jabel Ali Airport, in Dubai, wherein the free zones established in 1985 house 6000 companies involved in manufacturing (Shah & Sanjeevan, 2013). Warsaw, Chopin Airport City is another example of the airport city, wherein 60 thousand square meters of land was allocated to cutting-edge warehousing and light manufacturing facilities, (Stangel, 2011).

Guller and Guller (2003) note that one of the attributes of an airport city is that it is a city without a territory, as there is no territorial authority overseeing development on and around an airport. As most of the airport cities in the European countries falls within the jurisdiction of several municipalities, these territorial conditions make it difficult to reach centrality. Schiphol International Airport is a noted example of airport-related development in Europe. In South Africa, Airports company South Africa has planned various urban developments on and around major airports, namely Cape Town International Airport, OR Tambo and King Shaka International Airport (ACSA, 2019).

Appold and Karsada (2012) analysed the distribution of employment around 25 major US airports and the finding reveal a substantial amount of employment within the 2.5 miles radius of those airports. The data used to examine the distribution of economic activities was obtained from the Zip Business Patterns, Bureau of Transport Statistics, airport reports and other sources. For instance, over 55000 were employed on-site at Atlanta's Hartsfield-Jackson Airport, exceeding the US Census definition of a metropolitan area central city (Appold & Karsada, 2012). Additionally, the airports possess the attributes of the cities as their employees require the places to live. In this regard, the airports attract both aviation-related and non-aviation land uses, therefore the airports have the ability to transform the areas in their immediate to airport cities.

However, some scholars dispute the existence of an airport city as they argue that the concept has been used as a marketing tool for real estate development around the airport vicinity. As noted by Knippenberger and Wail (2010), due to the lack of the city characteristics such as heterogeneity, density, mixed-use, public amenities and permanents, the developments around the airport should be referred to as "airport suburbia" rather than being referred to as 'airport city'. Figure 2.1 shows the spatial zone of airport-related industries.

Figure 2. 1: Spatial zoning of airport-related industries



Source: (Adapted from Wang and Hong,2011)

Airports in Asian countries have been transformed merely by transportation infrastructure to airport cities. A case in point is of Taoyuan International Airport (TIA) in Taiwan where the Government of Taiwan established Free Trade Zones around Taoyuan International Airport (Wang & Hong, 2011). Characterised by the airport at the core, an airport city integrates airport logistics, business travel, leisure and recreation through land-use planning and extends further into an integrated industry with both vertical and horizontal collaboration (Wang and Hong, 2011).

On the other hand, Cidell (2015) critique the existence of an airport city model around the major 25 airports around the United States of America. The study analyses the distribution of jobs within the 2.5 miles and 5-mile radius of a CBD and major infrastructures around 22 US metropolitan areas and 25 major airports. The study reveals that most of the jobs are concentrated around other major infrastructures such as a water treatment plant and a few jobs were attracted by the airport. Cidell (2015) posits that an airport model is highly unlikely to be developed as airports have been fitted into an existing metropolitan area with

established patterns and directions of growth. Therefore, some scholars dispute the existence of airport cities as well as the role of airports as engines of economic development.

2.5.3 Aerotropolis

The aerotropolis model is the brainchild of an American Professor, John Kasarda. Bosma & Nikolaeva (2013) describe the aerotropolis model as the airport-related development which is based on the airport city, and the airport is usually found at the core surrounded by the logistics for the transportation of lightweight and high-value goods. Furthermore, CERP (2018) defines an aerotropolis as a metropolitan region where the layout, infrastructure, and economy are centred on the airport and its commercial core.

The aerotropolis concept focuses on the airport-wide area and it extends over 25km around the central airport and is mainly characterised by a system of transport radial links (Schlaack, 2010). An airport is found at the core and is surrounded by aviation-oriented suburban clusters. As regards airport-related development around South African Airports, Airports Company South Africa report (2019: 44) defines an aerotropolis model as characterised by dense, central, multimodal and multifunctional which is interconnected with economic activities such as commercial activities, industrial activities and leisure which are consciously linked to the core/ airport city via roads, public transport and freight system. It should be noted that the agglomeration of various airport-related/ linked will give rise to a new urban form. Additionally, the integration of various land uses located along major transport corridors which depend on an airport has given rise to the emergence of a new spatial urban form.

A typical example of an aerotropolis is Hartsfield-Jackson Atlanta International Airport (HJIA) in the United States of America. According to CERP (2018), the Aerotropolis Atlanta Alliance (AAA), a coalition of business leaders and community leaders was formed in 2014 and was committed to transforming the area around Hartsfield-Jackson Atlanta International Airport into a bustling economic district where the locals could get jobs. Through public-private partnerships, the Aerotropolis Atlanta Alliance managed to attract investment, as several companies were locating their offices close to the airport, and Porsche was one of the companies that considered the location close to Atlanta International Airport.

Karsada (2006) is of the view that the most competitive manufactures are found close to the airports largely because of the existence of the state-of-the-art technology and efficient mode of transport which provides easy access to customers' needs. This provides a more conducive environment for the manufacturing firms to come up with an efficient agile production system that can easily connect them to their suppliers and customers (Karsada, 2006). It could be noted that an aerotropolis is characterised by a well-established ground to air shipping network, as such, it attracts the clustering of time-critical manufactures hence this enables manufacturers to shorten the production cycle and quickly access inputs to the manufacturing from the suppliers (Kasarda, 2008; Kasarda & Canon, 2016).

In South Africa, Ekurhuleni aerotropolis is a typical example of the aerotropolis development at the local context that has been adopted by the City of Ekurhuleni and the Gauteng Province. The City of Ekurhuleni adopted the aerotropolis master plan in 2017, and it will be implemented in the next five to twenty-five years. Ekurhuleni Aerotropolis is an urban development concept whereby the metropolitan region's layout, infrastructure and economy has an airport at its core (City of Ekurhuleni, 2018). Ekurhuleni aerotropolis encompasses OR Tambo International Airport (ORTIA) and the Gauteng Industrial Development Zones (GIDZ). According to Ekurhuleni Aerotropolis master plan, the key investment opportunities offered inter alia include aerospace manufacturing and aviation, professional services and public services administration, retail, tourism and culture, manufacturing and high tech, and health and life sciences. It can be commented that the aerotropolis model encompasses various land uses that interlink with the airport. However, a point worth noting is that the proposed aerotropolis includes a variety of land use that depends of the connectivity with the airport.

Durban aerotropolis is another example of aerotropolis development in South Africa. Dube Tradeport report (2017) cited in Luthuli and Haughton (2019) notes that Durban aerotropolis is viewed as the hub of trade and business, and will become South Africa's new gateway to Southern African region. The Durban aerotropolis comprises King Shaka International Airport and Dube Tradeport at its centre. According to Dube Tradeport report (2018), "*Dube TradePort Corporation is a business entity of the KwaZulu-Natal Provincial Government and is responsible for developing Dube TradePort Special Economic Zone, a highly competitive business operating environment and home to King Shaka International Airport*". As noted by Luthuli and Haughton (2019), Durban aerotropolis is planned freight oriented development

comprising a world class logistics hub that is incorporated in the greenfield site near the northern boundary of eThekweni Municipality. The study of Durban aerotropolis was done to conceptualise the aerotropolis region in the framework of regional economic development. The study findings reveal that in terms of function, Durban aerotropolis was conceived as a place to work, place for innovations, space for world class logistics and a space for food production.

2.5.4 Airport Corridor

As noted by Schlaack (2010), the airport corridor is an area linking the airport with the centre of the metropolitan region and it was advocated by the Schiphol Group. The model is characterised by a strategically public-planned infrastructural spine to the inner city and by a functionally integrated development of rail or road infrastructure and real estate, (Schaafsma, 2009). The airport corridor links the airport and a central city as a band of integrated railway and road infrastructure and property development (Freestone & Barker, 2011). In this regard, the interconnectedness of various transport infrastructures and airports create economic zones. The functionality of the corridor is depicted by the interaction of the airports with another landside transportation infrastructure.

More importantly, it is to note that public-private partnerships play a crucial role in the development of an airport corridor. Schiphol Airport in the Netherlands is a typical example where both public and private stakeholders partnered in airport-related development, which culminated in the transformation of the airport city into an airport corridor. Schaafsma (2009) asserts that in the 1980s, the Dutch government chose to give impulse into two country's main ports, namely Schipol Airport and the port of Rotterdam. The Province of North Holland, the city of Amsterdam, the municipality of Haarlemmermeer and Schiphol Airport decided to co-operate more closely on the development of a logistic complex around the airport. A governmental forum, i.e. Bestuursforum Schiphol and the Schiphol Area Development Company (SADC) were formed, and the private banks were invited as well (Schaafsma, 2009). Engagement of different stakeholders in form of public-private partnerships yielded positive results in developing areas around Schiphol airport and by attracting logistics facilities and head offices from Japan and North America.

As noted by Schaafsma (2009), the traditional planning instruments struggle with the challenges of the airport corridor as different stakeholders get involved. These challenges are associated with governance issues, spatial integration and synergy. Due to the involvement of stakeholders involved in airport-related development, there are always conflicting interests due to a lack of shared values. There is a need to apply shared value among different stakeholders to ensure that there is coordinated development.

2.5.5 Airea

The airea model of airport-related development explains the interaction between various fragmented developments within a metropolitan region and the airport (Schlaack, 2010). It is argued that the concept delivers an approach, a toolkit and a new spatial category to analyse and describe airport-related development (Schlaack, 2010). Furthermore, the model analyses different parts of a metropolitan region which are influenced by the existence of an airport. With regards to scale, the airea concept analyses the interrelation between the airport and the broader metropolitan region. A point worth noting is that the model helps to understand the influence an airport might have on both geographic space and economic space, as the airport does not only impact the developments within its immediate vicinity but could also have an impact on the development located elsewhere within a metropolitan region. Similarities with other normative models such as the airport corridor are noted as different stakeholders are involved in the development of an airea.

Figure 2. 2: The schematic diagram of the airea concept:



Source: Schlaack, 2010

As argued by Schlaack (2010), the airport-related development around Denver International Airport (DIA) in the United States of America and the Berlin Brandenburg International (BBI) are typical examples of airea. In both case studies, the Airea components were defined by proximity, accessibility, and distance, i.e. 25km from the airport and other strategic markets. The findings on both airports depict that airport-related developments are heterogenic and spread islands across the wider metropolitan area.

In light of the above-mentioned normative models for airport-related development, it should be noted that these models describe the clustering, agglomeration economies and linkages of economic activities within the airport environs. On the other hand, these are also spatial economic factors that influence the concentration or dispersion of economic activities. Manufacturing firms are among the economic activities located around airports because of agglomeration economies and linkages.

2.6 CONCEPTUAL AND THEORETICAL FRAMEWORK

A theory has been described as an explanation of a particular social phenomenon (see Abend, 2008). A theory is made up of concepts as the building blocks which help to analyse the

phenomenon being studied. For instance, the concepts of space, proximity, firm, clustering, agglomeration economies and linkages are some of the building blocks of the locational theories. Economic activities arise, grow and develop in space and productive resources are unevenly distributed in space as they are concentrated in a specific place, region or city, whilst they are non-existent in other regions (Capello, 2009). The conceptualisation of space is the central theme of the location theories as different connotations are given to the interpretation of space. The locational theories differ in hypothesis as some theories seek to describe the locational choices of firms, some seek to identify the production areas, and some seeks to analyse the economic and spatial mechanisms that regulate sizes of agglomeration (Cappello, 2009). Location theories provide the framework for the analysis of the location of economic activities and the reasons why they are located in that particular space (Cappello, 2009; Thisse, 2005). The subsequent sections describe the key concepts that guide the analyses of the phenomenon under study.

2.6.1 Concepts

2.6.1.1 *Geographic space*

The phenomenon of geographic space plays a significant role in understanding the locational choices of firms within a geographic space. To get a full insight into the meaning of the concept, it is important to first analyse the constituent elements of geographic space. Firstly, the concept of space is conceived from different dimensions such to say the concept of space can be understood in relative and absolute terms (Elden, 2009). In this regard, the meaning of space in absolute terms implies space as a fixed container and considers the existence of cadastral boundaries whereas the conception of space in relative terms implies that space is not a fixed container, rather it is characterised by relations among objects (Elden, 2009). Lastly, after unpacking the notion of space, based on absolute and relative terms, it is imperative to describe the impacts of geographic space in the location of manufacturing firms within the vicinity of airports.

Mazúr and Urbánek (1983) argue that the concept of geographic space is relational. It implies that the spatial characteristics of a geographic space derive its meaning from the conception of space in both absolute and relative terms. Sminvorv (2015) argue that geographic space is understood as an orderly place that is made up of locations that can easily relate to each other. It has been further noted that geographic space is a triplet that comprises locations, orderly spatial relations and topology (Sminvorv, 2015). It could be argued that geographic space

brings into fore the aspect of the spatial structure of a given location thus facilitating the linkages between economic actors within a certain geographic space. Mazúr and Urbánek (1983) maintain that the idea of conceiving space as absolute or space as an embodiment of emptiness explains the notion of geographic space in relational terms. As such the notion of geographic space seems to oscillate between two variables namely absolute space and relative space (Mazúr & Urbánek 1983). To this end, it can be argued that the notion of geographic space brings in the aspect of linkages, the interdependence of various entities be it spatial or non-spatial entities within a given space.

2.6.1.2 Economic space

The concept of economic space appears to be elusive. Economic space has been defined using different approaches from a regional economic perspective and these approaches include territorial, institutional, management and resources (Litvinenko, et al., 2016). From the territorial perspective, economic space has been defined as the interrelatedness of the objects within a given space and these objects entail industrial enterprises, residential areas, economy and transport networks (Litvinenko et al., 2016). Perroux (1950) conceives an economic space as spaces that are characterised by the interrelations between the economic elements within a certain location. Economic space is considered to be made up of a space of homogeneous aggregates, space that is characterised by the field of forces and the economic space that is described by a plan (Perroux, 1950). It can be noted the economic spaces which are defined in the context of the field of forces imply the economic space which is characterised by two important elements namely the centre (pole) and the periphery where the forces of attraction and repulsion take place (Perroux, 1950).

Henri Lefebvre conceptualises space as the social construct that is created through the social relations, and is depicted as a triad of spatial practice, representation of space and spaces of representation (Leary-Owhin, 2015). Additionally, Lefebvre and Nicholson Smith (1991) argue that space is a product of the relations. Space is conceived as the interlinkage of the built environment, geographic form, symbolic means and routine of life. Spatial practice embraces production and reproduction (Molotch, 1993). Informed, by Lefebvre's conceptualisation of space, it can be argued that space must not be viewed in abstract terms, but it must also be viewed in relational terms as it created by a combination of varied forces.

2.6.1.3 Proximity

The notion of proximity plays an essential role in assessing and understanding the locational choices of manufacturing firms within a given geographic space. The concept of proximity is broadly categorised into two forms namely, spatial proximity and non-spatial proximity (Aguilera et al., 2012). Spatial proximity which encompasses distance-related factors forms the basis of geographical proximity, which is one of the five dimensions of proximity, to be discussed hereunder.

Knoben and Oerlemans (2006) assert that geographical proximity relates to territorial, spatial or physical proximity and often it is used to mean proximity. Boschma (2005) defined geographical proximity as the physical distance between economic actors within a given space. In this regard, distance emerges as an important element that explains the closeness or farness and the interaction of economic actors within a geographic space. Knoben and Oerlemans (2006) and Boschma (2005) argue that relative distance or absolute distance plays an essential role in explaining the interaction of economic actors within a geographic area. It has been argued that some discourses on geographic proximity describe it in the absolute geographical distance terms which determines the farness or closeness of different economic actors and in the relative distance which determines the travel times from one economic actor to another (Knoben & Oerlemans, 2006).

Scale is also another important element of geographic proximity which is worth mentioning. This relates to the same territory, cluster or metropolitan region whereby different economic actors or firms belong. Boschma (2005) argues that actors who are spatially concentrated stand to benefit more from knowledge externalities. To this end, it can be argued that geographic proximity plays a pivotal role in knowledge transfer and short distance interactions among the economic actors facilitate face to face interaction, which ultimately results in knowledge transfer among firms within the same geographic location (Knoben & Oerlemans, 2006). Torre and Gilly (2000) as quoted by Knoben and Oerlemans (2006) assert that short geographic distance draws together organisations and influences the exchange of information and knowledge between economic actors.

However, other dimensions of proximity are forces to reckon with when analysing the locational choices of manufacturing firms within a given location. In this regard, organisational proximity put much emphasis on the transfer of knowledge across larger

distances by a well-coordinated central authority (Boschma, 2006). Knobens and Oerlemans (2006) argue that there is no universal definition of organisational proximity on the scholarly desk, as such the concept suffers immensely from conceptual ambiguity. According to Oerlemans and Meeus (2005) quoted by Knobens and Oerlemans (2006) organisational proximity is perceived as 'actors that belong to the same space of relations'. Torre and Rallet, (2012) argue that organisational proximity denotes the use of rules and procedures that link actors within an organisational framework. Boschma (2005) defined organisational proximity as an interdependence within an organisation connected either on the economic or financial basis of a group of industries or a network. Therefore, based on these definitions a conclusion can be drawn whereby interdependence and networking emerge as important elements in knowledge transfer to firms that are not necessarily located close to each other. Also, the degree of being autonomous emerges as an important aspect in explaining the interactions or relations when it comes to decision making and the running of day-to-day activities between economic agents which operate within the parent and subsidiary structures. It has been argued that relationships within the organisational proximity can be inter-organisational or intra-organisational. In this regard, networking and collaboration acts as bedrock in explaining the knowledge and information transfer between firms. As such, globalisation emerges as an important element in understanding the relationships which occur within an organisation, thus the physical distance is no longer considered as an important factor in explaining the locational choices of firms within the vicinity of airports.

More importantly, the notion of institutional proximity has a bearing in explaining the locational choices of manufacturing firms within the vicinity of the airports. The definition of institutional proximity is deeply indebted in North's description of institutions which considers formal institutions such as the constitution, laws and the informal institution which consist of customs, cultural norms and code of conduct (North, 1991 cited in Knobens & Oerlemans, 2006). Boschma (2005) posits that formal and informal institutions influence how organisations or firms coordinate their actions. As such the relations can be intra-organisational and inter-organisational with a shared common system within the same institution. It has been argued that institutional proximity entails the common language systems, shared cultural norms and common habits provide the basis for economic coordination which results in information and knowledge transfer between economic actors within the same institution (Boschma, 2005).

It has been argued that the notion of institutional proximity encourages free knowledge transfer among economic actors through the shared common cultural norms, same habits and rules applicable to the same institution (Cappelo, 1999 cited in Knoblen & Oerlemans, 2006). Knoblen and Oerlemans (2006) quoted by Aguilera et al. (2012) argue that organisational norms, rules and legislative conditions and labour relations play a significant role in understanding the role of institutional proximity in influencing the location of manufacturing firms within a given space. In this regard, it can be argued that the notion of institutional proximity embodies the cultural norms and habits shared by the same economic actors within the same institution.

2.6.2 Theories

2.2.2.1 Alfred Weber's Industrial Location Theory (1929)

Alfred Weber's 1929 industrial location theory also gives insights into the reasons why industries /firms choose other locations over others. The theory stresses that there are three major locational factors namely transport costs, labour costs and agglomeration or de-agglomeration forces, i.e. local factors which determine the degree of dispersion. Additionally, Weber assumed that transport costs are directly related to the distance travelled and developed a 'material index' which was used to determine whether the optimum location is closer to the source of the material or the market (Weber & Friedrich, 1929). The material index is the ratio of the weight of local material inputs and the weight of the final products and if the ratio is greater than one, it is market oriented. However, the theory analyses the locational factors influencing industrial location within the geographic space. Informed by the Industrial location theory, transport factor and the agglomeration economies were derived as the analytical framework for data collection and analysis. For instance, a few of the firms interviewed confirmed that they chose to locate close to airport due to geographic to the airport, and some confirmed that obtain their inputs from some of the firms located at the airport.

2.6.2.2 Growth pole theory (1955)

Informed by the concepts of space, proximity, clustering and linkages, the phenomenon of airport-related development were analysed through the lens of the growth pole theory. Perroux 1950: 27 cited in Mønsted (1974) defines growth poles as centres or poles or foci from which centrifugal forces emanate and to which forces are attracted. In his theory, Perroux pointed out that growth does not appear everywhere at the same time, as it manifests

itself in points or poles and variable intensities; it spread through different channels and with variable terminal effects (Mønsted, 1974). Growth Pole is characterised by propulsive industries that stimulate other economic activities through forward and backward linkages.

According to Perroux, the growth pole denotes a firm, an industry or a group of firms within an abstract space and is characterised by a high degree of interaction with other firms and a high level of innovation (Mønsted, 1974). In addition, the growth pole theory conceptualises space as a 'diversified relational', as development is defined as selective cumulative processes which do not appear everywhere at the same time. But rather development manifests in poles at which development concentrate because of synergic and cumulative forces generated by stable and enduring local input/output relations enhance by physical proximity (Capello, 2011).

It should be noted that firms or groups of firms are interlinked through input-output relations. Perroux growth pole theory is a departure from the location theories which mainly emphasize the geographic space as it stresses the importance of the economic space. Growth Pole theory conceptualize space as economic space whereas locational theories stress the importance of the geographic space. Industries or firms may be located within the same geographical space, but they may not interrelate as they interact with firms located elsewhere and thus emphasizing the importance of the economic space and organisational proximity.

In conclusion, the growth pole theory was used in analysing the phenomenon under study. The concepts of relational space and the linkages derived from the growth pole theory informed data collection, as well as data analysis (refer to the subsequent chapters regarding data collection and data analysis). However, it is submitted that the contribution of other location theories is relevant to provide a comprehensive analysis of other locational factors influencing the location of manufacturing firms within the environs of an airport.

2.6.2.3 New Economic Geography (NEG)

The New Economic Geography models were first propounded by Paul Krugman in the early 1990s. Capello (2011) is of the view that space is also conceptualized as diversified-stylized, and the New Economic Geography theories integrate the growth and location theories. Central to the theories and models of New Economic Geography is the assumption that

productive activities concentrate around particular poles or points so that development is diversified within the same region (Capello, 2011).

Mackinnon and Cumbers (2019) assert that NEG models analyse the tensions between the economic landscape that promotes the concentration of economic activities in one region and the one that favours geographic dispersion in one region. The economic forces that influence the concentration or dispersal of economic activities are referred to as centripetal forces and centrifugal forces. Centripetal forces are the factors that promote the geographical concentration, and these include, market size, labour market, i.e., large and specialized and access to information from other firms, whereas the centrifugal forces are factors that encourage dispersion of economic activities (Krugman, 1999). These include immobile factors of production such as land and, to a considerable extent, labour, and the costs of concentration such as congestion (Mackinnon & Cumbers, 2019).

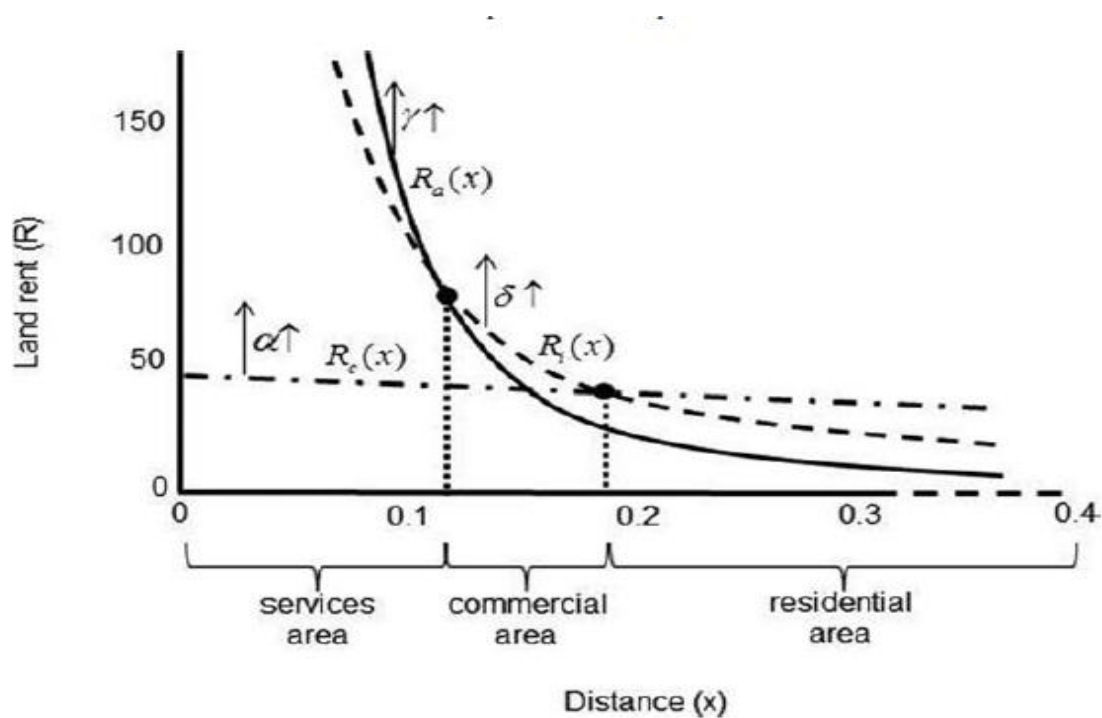
As further argued, the typical outcome of the concentration will be the development of a core-periphery pattern and dispersal will result in the development of the specialized firms. Borrowed from the New Economic Geography model, the centripetal forces and centrifugal forces enabled the researcher to explain the push and pull factors regarding the location of the manufacturing firms that are found on and around Cape Town International Airport.

2.6.2.4 Von Thunen's Theory

In their study, Flores-Fillol et al. (2016) analyse the distribution of economic activities around four aerotropolises in the United States of America, namely Memphis International Airport in Tennessee, Louisville International Airport in Kentucky, Los Angeles International Airport in California and Newark Liberty Airport in New Jersey. The samples were drawn from the US business census between the period of 2000 and 2010, and they grouped economic activities into service operators, commercial firms and consumer workers. As noted by Flores-Fillol et al. (2016), service operators provide several complimentary services to commercial firms (e.g. freighter docks, bonded warehouse, mechanical handling, refrigerated storage, fresh meat inspection, etc.). The service operator provides services to commercial firms near the airport and several commercial establishments are located in close proximity to the service sector to enjoy their services. The attractiveness of the airport was determined by the distance to/ from the airport and land competition around airports takes place among service operators, commercial firms, and consumers-workers (Flores-Fillol et al., 2016).

Informed by Von Thunen's Land Use Model, Flores-Fillol et al., (2016) developed a framework to analyse the land-use competition and the distribution of the economic activities around four aerotropolises in the United States of America. Three agents, namely service operators, commercial sector and consumer sector compete for land within an auction mechanism. According to Flores-Fillol et al. (2016), an aerotropolis appears when the spatial sequence of services area, commercial area, and residential area arises as to the land equilibrium outcome. As acknowledged by Fujita and Thisse (2013) cited in Flores-Fillol (2016), the novelty of Von Thunen's work is that he introduced the bid rent function.

Figure 2. 3: The aerotropolis land equilibrium



Source: Flores-Fillol et al., 2016

The bid rent function gives an insight into the spatial heterogeneity found within the airport-related developments, in particular the aerotropolis setting. One can comment, the location rent is among the driving forces of the location of different land uses within the airport environments as depicted by the empirical results of land use organisation among four airports in the United States of America. For instance, Memphis International Airport and Louisville International Airport are the base of FEDEX and UPS (Flores - Fillol, 2016). The

findings of the study reveal that the service sector locates close to the airport, followed by the commercial area and the residential area.

2.7 SYNTHESIS AND SUMMARY

Informed by the literature reviewed in the previous sections, it was found that multiple factors influence airport-related development. Institutional and spatial economic driving forces play a significant role in shaping airport-related development. As noted by a number of research (Ayuntamiento-Madrid, 2013; Prospero, 2007; Mokhele, 2018b, Van Wilk, 2007, Coetzee & Swanepoel, 2011; Blanton, 2004), airport-related development is mainly attributed to spatial-economic factors as the major determinants of airport centric development. However, it can be noted that there might be other underlying factors that influence airport-related developments. For instance, the existence of reliable transport infrastructures such as railway infrastructure and road infrastructure maybe some of the underlying factors which attract some land uses within the proximity of the airport environments.

Furthermore, the existing literature in part insufficiently addresses the contribution of public-private partnerships in airport centric development. As noted by Schaafsma (2009) and Schlaack (2010) the normative models of airport-centric development, namely airport city, airport corridor; aerotropolis and aerea acknowledge the role of the public partnership in the growth of airport centric developments. Therefore, the institutional and spatial economic forces are intertwined, and they are not independent of each other. Extensions are required in literature to explore the contributions of public-private partnerships in the growth of airport centric development.

Moreover, it was found that the literature relating to airport centric development adequately addresses the economic impacts of the airports as well as the distribution of the economic activities/ land uses around the airports (see Appold & Karsada, 2012; Cidell, 2015, Coetzee & Swanepoel, 2017; Blanton, 2004; Prospero, 2007). However, a salient observation that was made from the existing literature is that there are few empirical studies (see Mokhele, 2018b) that describe the distribution of economic activities around the airports as well as the underlying factors/ reasons why that land uses chose to be located close to the airports. In this regard, the extension is required to the existing literature in order to understand the underlying driving forces around the airport centric development.

In light of the empirical literature reviewed, it has been noted that the existing studies insufficiently address the role of the locational theories in the distribution of airport centric development around the airports. Most importantly, a plethora of literature analyses the economic impacts of airports (i.e., direct, indirect, induced and catalytic) impacts of the airports as well as the mix/composition of land use on and around the airports in general (Ayuntamiento-Madrid, 2013; Prospero, 2007; Blanton, 2004; Mokhele, 2018b), however, few studies analyse the distribution of airport centric developments informed by the lens of locational theories (Hoare, 1974; Mokhele, 2016; Flores-Fillol et al., 2016). It is recommended that the extensions in the literature that analyse the distribution of land uses around the airports through the lens of locational theoretical framework are required. Against the backdrop of the literature review, the next chapter presents the research methodology and methods that were employed to collect and analyse data.

CHAPTER 3: RESEARCH METHODS AND METHODOLOGY

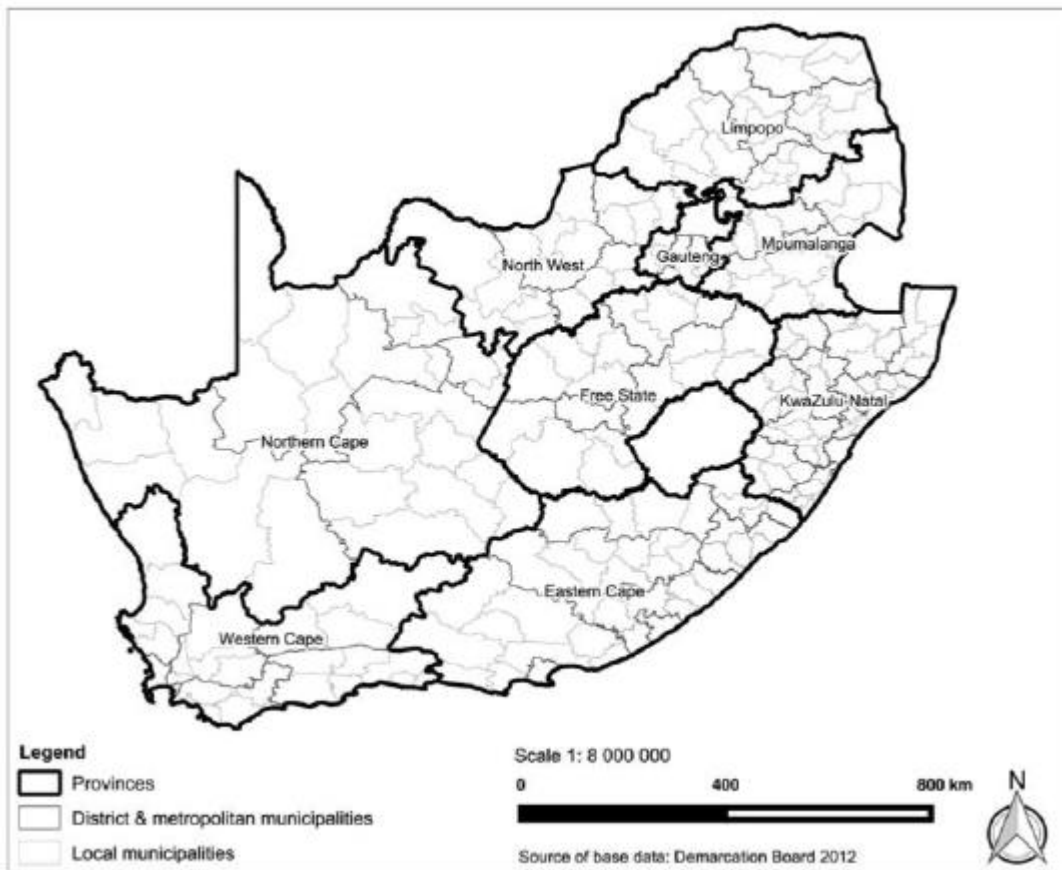
The foregoing chapter presented a systematic literature review of the institutional and spatial-economic factors that influence the location of the manufacturing firms around airports. The normative models of airport-related development were fully explained and the spatial-economic factors relating to clustering, agglomeration economies and linkages were found to be key factors that influence the location of the manufacturing firms and other business activities in the immediate surroundings of the airports. To address the research questions, objectives and aim, the growth pole theory was adopted as the main theoretical framework for analysing the driving forces on the location of manufacturing firms around airports. Informed by the growth pole theory as the main theoretical framework, the current chapter presents the methodology and methods employed in the study. The chapter is structured into seven sections as follows: Section 3.1 profiles the location of Cape Town International Airport in at the national and provincial level, including the description of the research setting and provides the rationale for case study selection; Section 3.2 and Section 3.3 describes the data collection methods; Section 3.4 describes the mapping of spatial distribution of manufacturing firms; Section 3.5 describes the data analysis methods; Section 3.6 outlines the ethical considerations; and Section 3.7 provides the summary and closes the chapter.

3.1. RESEARCH SETTING

3.1.1. Location and management of Cape Town International Airport

There are three spheres of government in South Africa, namely, the national government, provincial government and the local government. As shown in Figure 3.1, South Africa is divided into which include; Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West and Western Cape (South Africa, 1996). Cape Town International Airport is located in the Western Cape Province. At the local sphere, South Africa is made up of municipalities and there are three municipalities categories of municipalities which include metropolitan municipalities (Category A), local municipalities (Category B) and district municipalities (Category C) (South Africa, 1998).

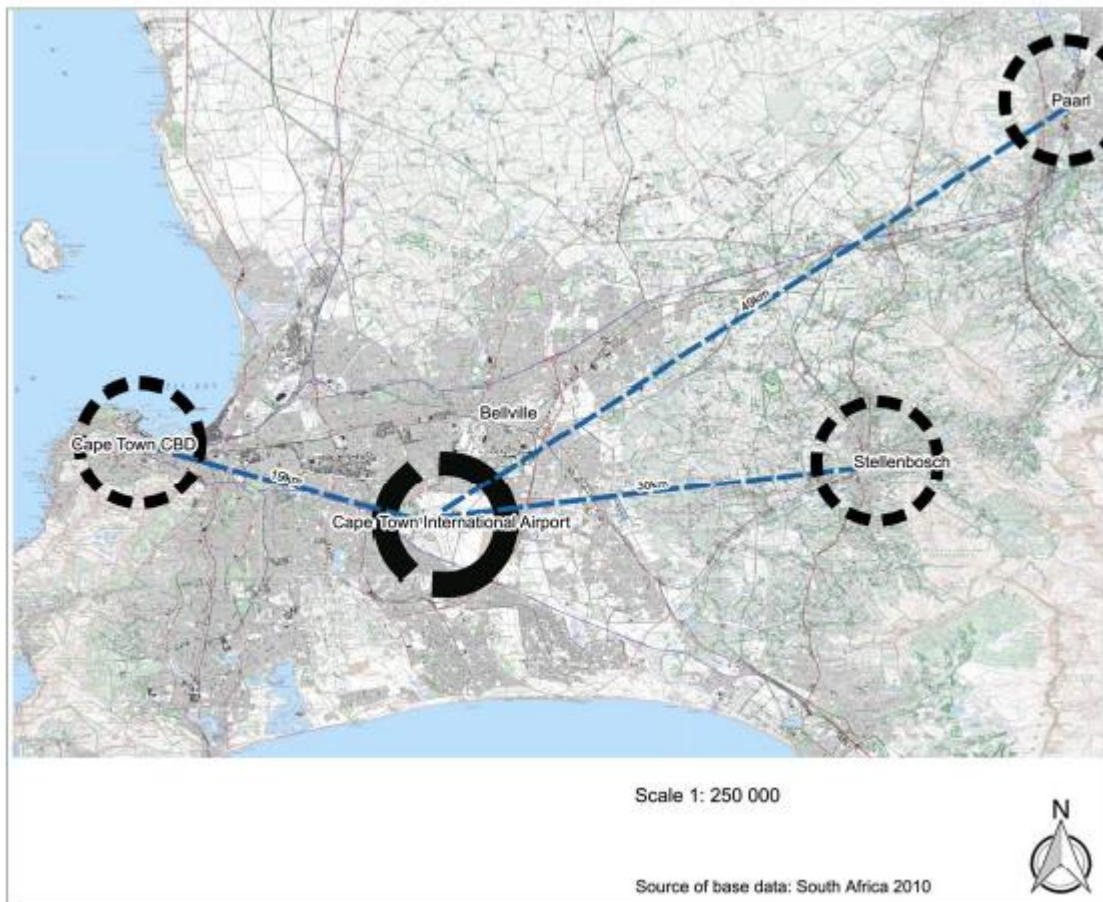
Figure 3.1 Location of Cape Town International in the national context



Source: Mokhele, 2016

It should be noted that there are 278 Municipalities in South Africa, of which 44 are district municipalities, 8 are metropolitan municipalities and 226 are local municipalities, (South Africa, 2020). The eight metropolitan municipalities include; Buffalo City (East London); City of Cape Town; Ekurhuleni Metropolitan Municipality (East Rand); City of eThekweni (Durban); City of Johannesburg; Mangaung Municipality (Bloemfontein); Nelson Mandela Metropolitan Municipality (Port Elizabeth) and City of Tshwane (Pretoria). As shown in Figure 3.2, Cape Town International Airport is located in City of Cape Town Metropolitan Municipality. As noted by Mokhele (2016), Cape Town International Airport is located approximately 19km from Cape Town Central Business District and approximately 8km from Bellville. Additionally, the airport is located approximately 43km from Paarl and 30km from Stellenbosch.

Figure 3.2. Location of Cape Town at the Municipal context



Source: Mokhele, 2016

Airports Company South Africa (ACSA) is a state-owned that owns and manages nine airports in South Africa (including Cape Town International Airport), and its mandate is derived from the Airports Company Act, No. 44 of 1993 (ACSA, 2019). ACSA has the responsibility to undertake acquisition, establishment, development, provision, maintenance, management, operation, and control of any airport in South Africa. Airports company South Africa owned airports include OR Tambo International Airport in Gauteng, Cape Town International Airport, Bram Fischer in Bloemfontein, Kimberley, George, Upington, East London, and Port Elizabeth airports (ACSA, 2019; Mokhele, 2018a). According to ACSA (2019), all airport master development plans follow the aerotropolis concept, which looks to stimulate regional growth and create job opportunities around our airports, in partnership with provincial and municipal authorities. With regards to airport-related development, the company has the mandate of facilitating new commercial development within the vicinity of airports, through identifying a vacant site for commercial and industrial development within

the vicinity of an airport. The provincial and local governments regulate airport-related development, as all new developments need to comply with the applicable zoning.

3.1.2 Case study approach

Shakir (2002) is of the view that a case study research strategy is deemed appropriate when a case study addresses a contemporary phenomenon that a researcher has no control over. In this regard, the case study approach enabled the researcher to do an in-depth analysis of how the spatial economic and institutional factors influence the location of manufacturing firms in the vicinity of Cape Town International Airport. As noted by Mokhele (2016), airport-centric development epitomises the collection of airport-centric firms in the geographical vicinity of the airport: an attribute that makes a case study approach suitable towards addressing the objectives of the study. The subsequent section describes the location in respect of the local context.

A single case study approach was adopted, and Cape Town International Airport was selected as the study area. According to ACSA (2019), Cape Town International Airport is the second-largest airport in South Africa after OR Tambo International Airport in Gauteng province. In the financial year 2019/ 2020, a total of 45 092 aircraft landed at Cape Town International Airport and the total annual departing passengers were 5 384 136. However, in the same financial year, i.e., FY2019/2020, a total of 10 470 706 passengers departed from O.R Tambo International Airport and 105 975 aircraft landed at the airport, (ACSA, 2020). The statistics reflect that Cape Town International Airport is the second busiest airport after O.R Tambo International Airport. The airport is bounded by the N2 freeway to the south, Stellenbosch Arterial to the north, Airport Industria to the west and the low-income residential area to the east (Figure 3.3).

3.1.2.1 Rationale for the case study selection

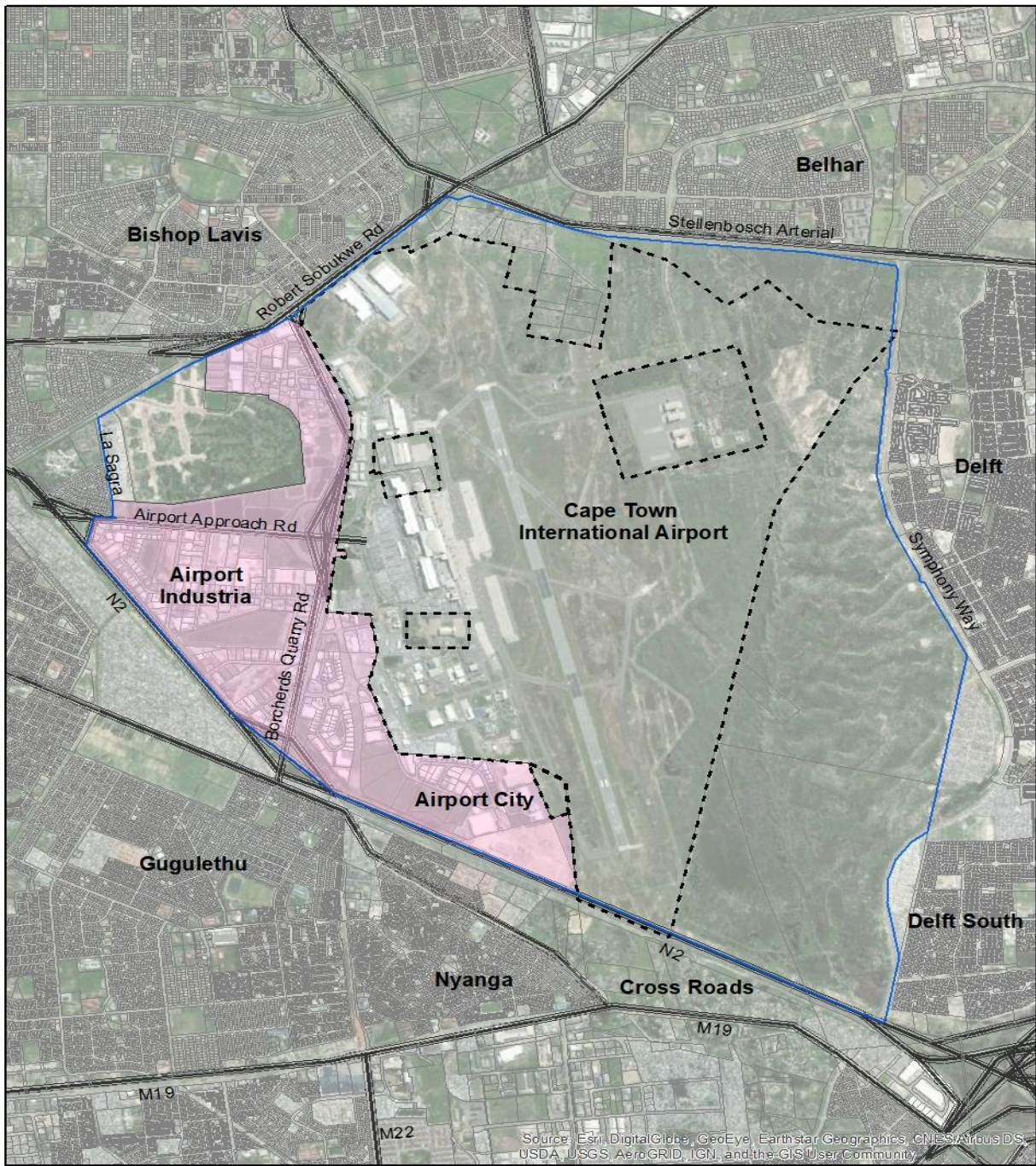
Cape Town International Airport was selected as an appropriate case due to its attributes, which include, but are not limited to, the stark contrast between the airport environment and the adjoining low-income residential areas. Furthermore, Western Cape is the second biggest economy in South Africa after Gauteng province, and the absence of a direct linkage with rail infrastructure makes it a unique study area compared to OR Tambo International Airport. Mokhele (2016) notes that Cape Town International Airport (CTIA) and OR Tambo

International Airport (ORTIA) are the only airports in South Africa surrounded by substantial and diverse land uses.

The study analysed the driving forces informing the airport-centric development within the vicinity of Cape Town International Airport. The quest to better understand the driving forces behind the development of the manufacturing sector has prompted the selection of Cape Town Airport as the case study. Figure 3.3 shows the boundaries of a study area. With respect to the spatial location, Cape Town International Airport is located in the Tygerberg District, and the City promotes the economic land uses around the airport through zoning and policy framework. As such, the areas around Cape Town International Airport have been identified as potential land-use intensification areas and one of the development strategies outlined in the Tygerberg District Plan is to reinforce Cape Town International Airport through its concentration of varied land uses to provide a substantial amount of job opportunities (City of Cape Town, 2012).

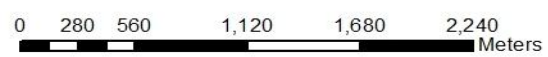
Railway infrastructure is important to industrial location, as most of the firms transport their raw materials by railway. The absence of a railway infrastructure linking Cape Town International Airport and the entire Cape Town metropolitan area indicates that the firms located within airport environs are mostly light manufacturing firms that transport their goods either by road or by air.

Figure 3. 3: Study Area



Legend

- Study area
- Industrial area
- Airport boundary
- Roads



Source: Author

3.2. RESEARCH METHODS

3.2.1. Assembling firm's database

The manufacturing firms located within Airport City and Airport Industria/ Boquinar Industrial were selected for this study. The total population of the manufacturing firms located on and around Cape Town International Airport are 67. The population of the manufacturing firms was obtained from the Airport Industria Improvement District (CID) website, Google Maps, Google Street View and City of Cape Town 2016 Industrial Survey as elaborated below. It should be noted that a smaller number of the manufacturing firms did not have websites and manufacturing firms were identified by the researcher when he was walking around the Airport City and the Airport Industria conducting the survey interviews. The researcher was aware that some of the manufacturing firms may be operating but without a website and Google Street View was also used to search for the names of the firms located around the airport. It should be noted that at the onset the researcher was not aware that there was existing data of the industrial survey conducted by the City of Cape Town, Economic Analysis Policy and Strategy Department in 2014 and 2016. The researcher was informed by the City of Cape Town officials when he was conducting the qualitative/ key informant interviews. The City conducted an industrial survey of all firms located in all industrial sites/ business parks across Cape Town and including the firms located in Airport Industria were included in 2016. The industrial survey conducted by the City in 2016 is available to the public on the City of Cape Town Open Data Portal. The subsequent sections explain how the firms database for the research was compiled.

Keywords such as manufacturing, Airport City, Airport Industria were typed on Google Chrome searching for the manufacturing firms located around Cape Town International Airport. The use of keywords enabled the researcher to limit the scope of the study and focus on the manufacturing firms located on and around the airport only, as the firms that engage in 'manufacturing' activities were selected. More importantly, the researcher resorted to the use of the information obtained from company/ firm websites to identify the manufacturing firms located on and around Cape Town International Airport. For instance, the firms' websites listed the products as well as the range of services offered by each firm. As such, no firms other than manufacturing firms were selected for this study. The websites were found to be reliable as they showed the firms that were still operational and the firms, which were no longer operational. The physical addresses of the firms were used to identify the spatial location of each manufacturing firm within the Airport Industria/ Boquinar Industrial and

Airport City. The information obtained from the websites of firms revealed that Airport Industria is a concentration of manufacturing firms that specialise in diverse manufacturing activities.

3.2.2 Sampling and descriptive survey

It is imperative to identify the units of analysis before describing the methods used to draw a sample. The units of analysis included the manufacturing firms located on and around CTIA. The main desirable characteristic of sampling is that it must be representative (Lunenburg & Irby, 2008; Babbie, 2007). It has been further noted that a representative sample enables the results to be generalised. The sampling frame is defined as the list of the elements from which probability sampling will be drawn. As discussed in the previous sections, the information obtained from the Airport Industria City Improvement District (CID) website, companies' websites showed that 67 manufacturing firms were located on and around Cape Town International Airport. Leedy and Ormrod (2015) note that there is no point in sampling the population of fewer than 100 elements, and one has to survey all the elements. As such, an attempt was made to survey all the manufacturing firms in the study area as the manufacturing firms located on and around Cape Town International Airport were less than 100 firms.

Visser et al. (2000) define survey research as a special field of study that involves the collection of data from a sample of elements drawn from a well-defined population through the use of the questionnaires. A descriptive survey method was adopted to address the quantitative research design. According to Fraenkel and Wallen (2012), in the descriptive survey, a set of questions in the form of questionnaires is administered to a large number of individuals either by mail, telephone or in person.

Survey research involves acquiring information about one or more groups of people, and the ultimate goal is to learn about the population by surveying a sample of that population, which is referred to as a descriptive survey (Leedy & Ormrod, 2015; Fraenkel & Wallen, 2012). Surveys are typically used in the research that uses individuals as units of analysis (Babbie, 2007). In this context, individual manufacturing firms located on and around Cape Town International Airport were the units of analysis. A survey of the manufacturing firms located around the airport was conducted to analyse the spatial economic factors that influence the location of the manufacturing firms near the airport. As further noted by Leedy and Ormrod

(2015), in survey research, the researcher summarises the responses from the willing participants by use of percentages, frequency counts and draws inferences.

Time is the critical factor in determining the research design and it shapes how the entire research is conducted. Babbie (2007) asserts that time plays many roles in the design and execution of research. There are two main types of survey research which include cross-sectional and longitudinal study. A cross-sectional study involves the observation of a sample of a population, or phenomenon at one point in time, whereas a longitudinal study entails the observation of the same phenomenon over an extended period (Babbie, 2007: Visser, 2000: Fraenkel & Wallen, 2012). Given the limited time to complete the thesis, as well as limited funding, a cross-sectional study of the manufacturing firms around Cape Town International Airport was conducted and the research could have been much more comprehensive should the researcher considered a longitudinal survey. For instance, a longitudinal study could have highlighted the spatial evolution of the location of the manufacturing firms located around Cape Town International Airport over the years.

3.2.2.1 Questionnaire formulation

The questionnaire covered both open-ended questions and closed-ended questions (see Annexure A). According to Babbie (2007), contingency questions are those some of the questions on the questionnaire that may be relevant to other respondents and irrelevant to some respondents. The researcher included some contingency questions as not all of the questions on the questionnaire were relevant to all the respondents. Informed by the concepts of geographical space, economic space, linkages, proximity, size of the firms, frequency of airport use, manufacturing categories and agglomeration economies, the questionnaire contained a set of questions that sought to address the spatial economic driving forces that influence the location of the manufacturing around Cape Town International Airport. As discussed in the subsequent sections herein, the main intention of the interviewer was to conduct face-to-face interviews and included some open-ended questions. As noted by Babbie (2007), probing is a technique that is employed by the interviewer to ask for clarity on incomplete responses.

3.2.2.2 Survey data collection

There are three common methods used for the collection of the survey data and these include face to face/ personal interviews with respondents, telephonic interviews and self-

administered questionnaires, (Babbie, 2007; Kothari, 2004; Leedy & Ormrod, 2015). A mixed method approach was employed as the survey data of the manufacturing firms located on and around Cape Town was collected through a combination of face-to-face interviews, telephonic interviews and self-administered questionnaires. The subsequent sections describe briefly how each of these three methods was used to collect the survey data.

As mentioned earlier, the intention was to employ face to face/ personal interviews to collect the survey data of the manufacturing firms around Cape Town International Airport. However, given the current COVID-19 restrictions, it was not possible to employ one method in collecting the data. Face-to-face interviews was preferred by the researcher due to the high response rate. As noted by Leedy and Ormrod (2015), in face-to-face interviews, the researcher has the potential of creating a rapport and gaining the cooperation of the respondents, although it has its shortfalls. For instance, face-to-face/ personal interviews are expensive to conduct, time-consuming and some respondents may not be willing to be interviewed at a particular time or at all. The survey interviews were conducted during the month of November 2021 and the first week of December 2021.

In the context of the current study, some of the respondents were not willing to participate in face-to-face interviews and they requested the researcher to leave the questionnaires so that they complete them when they had time. The researcher moved around the Airport Industria/ Boquinar Industrial area and knocked on the gates of the manufacturing firms requesting to conduct the interviews. Face-to-face interviews were done in a systematic order, as the researcher interviewed the firms located in one street at a particular time. For instance, the firms to be interviewed on a certain day were grouped by their street addresses. The researcher approached the human resources officers to assist with the contact details of the persons who are permitted to share the company's information with the researcher. Given the nature of the questions on the questionnaire, the researcher targeted the employees occupying managerial positions or the owners of the companies as they were the ones who were able to provide the data required. It should be noted that six face to face interviews were conducted with the respondents from the manufacturing firms located around Cape Town International Airport. Face to face interviews were conducted with the firm managers and some of the firm owners. However, due to COVID 19 restrictions, the researcher was not allowed to gain entry and to some of the firms.

To complement the face-to-face interviews, the researcher also conducted telephonic interviews with some representatives of the manufacturing firms that were not available for the face-to-face interviews. Telephonic interviews save time and are cheap to conduct (Babbie, 2007). A total of four telephonic interviews were conducted with the representatives of the manufacturing firms located around Cape Town International Airport. However, the telephonic interviews yielded a low response rate as compared to the face-to-face interviews as some of the respondents requested the interviewer to postpone the interviews, and set future interview dates.

Survey data was also collected through self-administered questionnaires in order to complement both face-to-face and telephonic interviews. As noted by Babie (2007), the popular social research method is through the administration of the questionnaires. As some of the respondents were not available for the interviews and requested the researcher to leave the questionnaires, questionnaires were distributed to the respondents who requested copies of the questionnaire. A total of 22 questionnaires were administered to the representatives of the manufacturing firms on and around the airport and only 13 were returned. However, the method did not yield the anticipated results due to a low response rate. For instance, the researcher followed up with the respondents to collect the filled questionnaires and was advised to come back on another day. Some of the respondents returned the incomplete questionnaires, and some did not even attempt to complete the questionnaire as they argued that they were busy with their work. An attempt was made to survey all 67 manufacturing firms around Cape Town International Airport. However, due to the COVID 19 restrictions and regulations it was not possible to interview all 67 firms identified.

3.3 QUALITATIVE INTERVIEWS

In-depth qualitative interviews were conducted with the representatives from the identified institutions namely, Airports Company South Africa (ACSA), City of Cape Town Land Use Planning department, City of Cape Town Policy and Research department and Airports Company South Africa (ACSA). Purposive sampling was used to select the key informants. Creswell and Plano Clark (2021) cited in Palinkas et al. (2015), note that purposive sampling involves identifying and selecting people who are knowledgeable or have experience on a particular matter. Snowball sampling was employed to identify other key stakeholders involved in the airport-centric development. However, some informants

identified through snowball sampling were not able to assist as they did not respond to researcher's requests for interviews. Table 3.1 shows the individuals who were interviewed.

Table 3. 1: Key informants that were interviewed

	Respondents / organisation	Position	Date of interview	Form of interviews
1.	City of Cape Town: Economic Analysis, Department of Policy and Research	Economic Analysis Manager	25 November 2021	Skype meeting
2.	City of Cape Town, Tygerberg District.	Section Head: Land Use Management	30 November 2021	Zoom meeting
3.	Airports Company South Africa (ACSA)	Property Management:	08 December 2021	Microsoft Teams Meeting

Source: Author

The key informants were selected based on their experience and expertise in the airport-centric development. The qualitative interviews conducted were virtual discussions booked in advance through emails or telephonic calls. The interview guide is attached as Annexure B. Initially, the researcher planned to conduct all face-to-face interviews. In light of the COVID-19 pandemic, the respondents opted for the virtual interviews as they were also working remotely. Ethical considerations were observed in conducting the interviews as participation was mainly voluntarily. The participation consent forms were given to the key informants before the interview commenced. The qualitative interviews were conducted by the researcher himself. As participation in the research was voluntary, a total of three key informant interviews were conducted with the representatives from the City of Cape Town (Land Use Planning department and Economic Planning and Research) and officials from Airports Company South Africa property management. However, interviews were not conducted with the officials from Spatial Planning in the Department of Environmental Affairs and Development Planning (DEA&DP) as they confirmed the interview date after the due date for submission of the thesis. Although interview requests were sent to WESGRO

and Airport Industria City Improvement District (CID), they did not respond to the interview requests.

3.4 MAPPING THE SPATIAL DISTRIBUTION OF MANUFACTURING FIRMS

The South African Standard Industrial Classification (SIC) Seventh Edition (2012) has 23 manufacturing divisions/ categories, which guided the researcher to identify the manufacturing firms. These include the manufacture of food products, beverages, tobacco products, textiles, wearing of apparel, leather related products, paper products, coke and petroleum refined products, wood products, printing and reproduction of recorded media, pharmaceutical products, rubber and plastic products, non-metallic mineral products, basic metals, fabricated metal products, chemicals and chemical products, electrical equipment, basic metals, machinery and equipment, motor vehicles and trailers, furniture, transport equipment, as well as the repair and installation of machinery equipment.

The firms' physical address, erf number, telephone, business name and activities were the information that was captured by the City of Cape Town. Although the survey was conducted five years ago, the data was useful to the study as the researcher was able to identify some of the manufacturing firms that were not added to the initial researcher's database. To confirm whether or not the manufacturing firms surveyed in 2016 were still located around the airport and operational the researcher searched for each company's name on Google and made telephonic calls with the firms that are still located around the airport and operational. As such, the firm database previously compiled by the researcher was updated to include some firms, which were not captured by the researcher. It should be noted that some of the manufacturing firms that were added to the firms' database were taken off the list as they would have relocated to other areas.

The mapping of the manufacturing firms around the airport was done to address the research question relating to the spatial distribution of the manufacturing firms. Kraak (1999) asserts that maps are integral in the spatial analysis as they reveal spatial relations and patterns and offer an insight into the distribution of a particular phenomenon. The mapping of the spatial distribution of the manufacturing firms around Cape Town International Airport (CTIA) was conducted in the GIS programme of ArcGIS 10.3.1. The business addresses listed on the Google Maps were used to cross-reference the spatial location of the firms in ArcGIS 10.3.1. All the input dataset was referenced to World's Geographic System 84 (WGS84) coordinate

system. The business addresses listed on the Company's Websites were used to plot the points on GIS, and the points depicted the spatial location of manufacturing firms.

3.5 DATA ANALYSIS METHODS

3.5.1 Qualitative data analysis

The qualitative data gathered through key informant interviews was through content analysis.. Content analysis is generally a method employed in the analysis of the text (Powers & Knapp, 2006 cited in Vaismoradi, 2013). It is a systematic coding of determining the frequency, patterns of words used, their relationship and the discourses of communication. The responses from the interviews conducted were transcribed into different themes. The primary aim of employing content analysis in conceptual form, and content analyst views data as a representation not of physical events but of texts, images and expressions created to be seen (Krippendorff, 2004 cited in Vaismoradi et al., 2013). A point worth noting is that through content analysis one can analyse data qualitatively and simultaneously quantify the data and conversely thematic analysis provides pure qualitative data.

3.5.2 Survey data analysis

The data obtained from the survey of the manufacturing firms around the airport was transferred into a Microsoft Excel spreadsheet and analysed using frequency analysis. Babbie (2007) describes frequency distribution as an observation of the number of times at which the variable under study is observed and it forms part of the univariate analysis. As noted further by Babbie (2007), univariate analysis entails the analysis of the single variable for description. The survey data obtained through the questionnaire was converted into numeric data for easier analysis in Microsoft Excel. First and foremost, codes were assigned to each question on the questionnaire, i.e., both open-ended questions and closed-ended questions. The data was presented in the form of tables, bar graphs and pie charts.

3.6 ETHICAL CONSIDERATIONS

Research involves working with people; therefore the researcher had to protect the participants from any form of violating institutional privacy or personal privacy and gain trust from participants as these factors have a bearing on the credibility of the research (Creswell 2007). Ethical issues were addressed by the researcher at different stages of research. The research proposal was approved by Cape Peninsula University of Technology Ethics committee before the research commenced. Additionally, participation in the study was

voluntary as the participants participated willingly. Table 3.2 summarise the ethical issues that were considered.

Table 3.2: Summary of ethical considerations

Stages in undertaking a research	Ethical consideration issues	Ways of addressing ethical issues
Prior to conducting a research	<ul style="list-style-type: none"> • Obtaining necessary permission. As mentioned previously, the research was cleared by the University Ethics committee. • Gaining permission from the site and participants. 	<ul style="list-style-type: none"> • An ethics clearance letter was obtained from the university ethics committee. • The researcher sought permission from the responsible authorities before embarking on the research (see Annexure C).
Beginning of the research	<ul style="list-style-type: none"> • Deception and Informed consent • Disclose the purpose of the study. • No coercion to participants; voluntary participation 	<ul style="list-style-type: none"> • Participants signed the participant consent forms.
Data collection stage	<ul style="list-style-type: none"> • Avoid deceiving participants. • Avoid collecting sensitive and harmful information. 	<ul style="list-style-type: none"> • The purpose of the study was discussed with the participants before the interviews commenced. • No sensitive information was collected.
Data analysis	<ul style="list-style-type: none"> • Respect the privacy of the participants. 	<ul style="list-style-type: none"> • Identifying information (e.g. real names) was not disclosed

Reporting, sharing and storing data	<ul style="list-style-type: none"> • Avoid falsifying, authorship, evidence, findings, and conclusion. • Data to be stored in a safe environment, which is protected with passwords. • Confidentiality. 	<ul style="list-style-type: none"> • Data was stored in a computer secure environment. • The original data collected from the interview will be kept for a period of 3 to 5 years for audit purposes.
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Source: Adapted from Creswell, 2014

3.7 SUMMARY

The chapter described the research methodology adopted to address the research questions and objectives. The research adopted a single case study approach as Cape Town International Airport and the surrounding firms (i.e., firms located in Boquinar Industria, King Air Industria and Airport City) were selected as the study area. Mapping of the manufacturing firms around Cape Town International Airport was done in GIS ArcMap 10.3.1. Frequency analysis was used to analyse the quantitative data and thematic analysis was employed to analyse the qualitative data collected through qualitative interviews with the key informants. The next chapter presents the research findings.

CHAPTER 4: RESEARCH FINDINGS

The previous chapter presented the research methodology and methods employed in gathering and analysing data on the manufacturing firms located on and around Cape Town International Airport. The current chapter presents the research findings of the analysis undertaken. Informed by the research questions, the chapter is structured into six interrelated themes. Section 4.1 describes the composition of the manufacturing firms located on and around Cape Town International Airport; Section 4.2 provides the spatial economic factors (linkages, agglomeration economies and clustering) that drive the manufacturing firms; Section 4.3 outlines the pull factors; Section 4.4 establishes the connection between policy and the manufacturing firms; and Section 4.5 describes the roles of different institutions in facilitating the location of the manufacturing firms on and around Cape Town International Airport. Section 4.6 closes the chapter.

4.1 COMPOSITION AND OVERVIEW OF THE MANUFACTURING FIRMS

Informed by the South African Standard Industrial Classification (SIC) categories, the manufacturing firms located around Cape Town International Airport were grouped into 11 divisions. As noted in the preceding chapter, frequency analysis was employed in the analysis of the manufacturing firms found on and around Cape Town International Airport. Although there are 23 industrial classification categories, the analysis revealed that there were 11 divisions of the manufacturing firms located around the airport. These include: manufacture of wood and wood products (Division 16), manufacture of food products (Division 10), manufacture of optical products (Division 26), manufacture of non-metallic products (23), manufacture of machinery and equipment (Division 28), manufacture of chemical and chemical products (Division 20), manufacture of textiles (Division 13), manufacture of rubber and plastic products (Division 22), manufacture of other transport equipment (Division 30), manufacture of motor vehicles and semi-trailers (Division 29), and manufacture of furniture (Division 31). The findings of the study revealed that most of the manufacturing firms located around the airport specialise in wood processing manufacture of rubber and plastic products and engaged in other manufacturing activities. Table 4.1 shows the mix of the manufacturing firms around the airport grouped according to the SIC categories. The findings from the survey of the manufacturing firms depict that the majority of the manufacturing firms located on and around Cape Town International Airport are firms

that specialise in wood products, rubber and plastic products and other manufacturing activities that do not have specific SIC manufacturing firms.

Table 4. 1: Mix of the manufacturing firms located around Cape Town International Airport

SIC Manufacturing subcategories	Number of manufacturing firms around CTIA	Total % of firms
Manufacturing of wood and of products and cork	2	8.7%
Manufacturing of food products	2	8.7%
Manufacture of other non-metallic mineral products	2	8.7%
Manufacture of computer, electronic and optical products	1	4.3 %
Manufacture of machinery and equipment	2	8.7 %
Manufacture of furniture	1	4.3 %
Manufacture of chemicals and chemical products	1	4.3 %
Manufacture of textiles	1	4.3%
Manufacture of rubber and plastic products	3	13%
Manufacture of other transport equipment	1	4.3 %
Manufacture of motor vehicles, trailers and semi-trailers	1	4.3 %
Manufacture of chemicals and chemical products	1	4.3%
Manufacture of fabricated metal products	1	4.3 %
Other manufacturing	4	17.4%
Total	23	100%

Source: Author

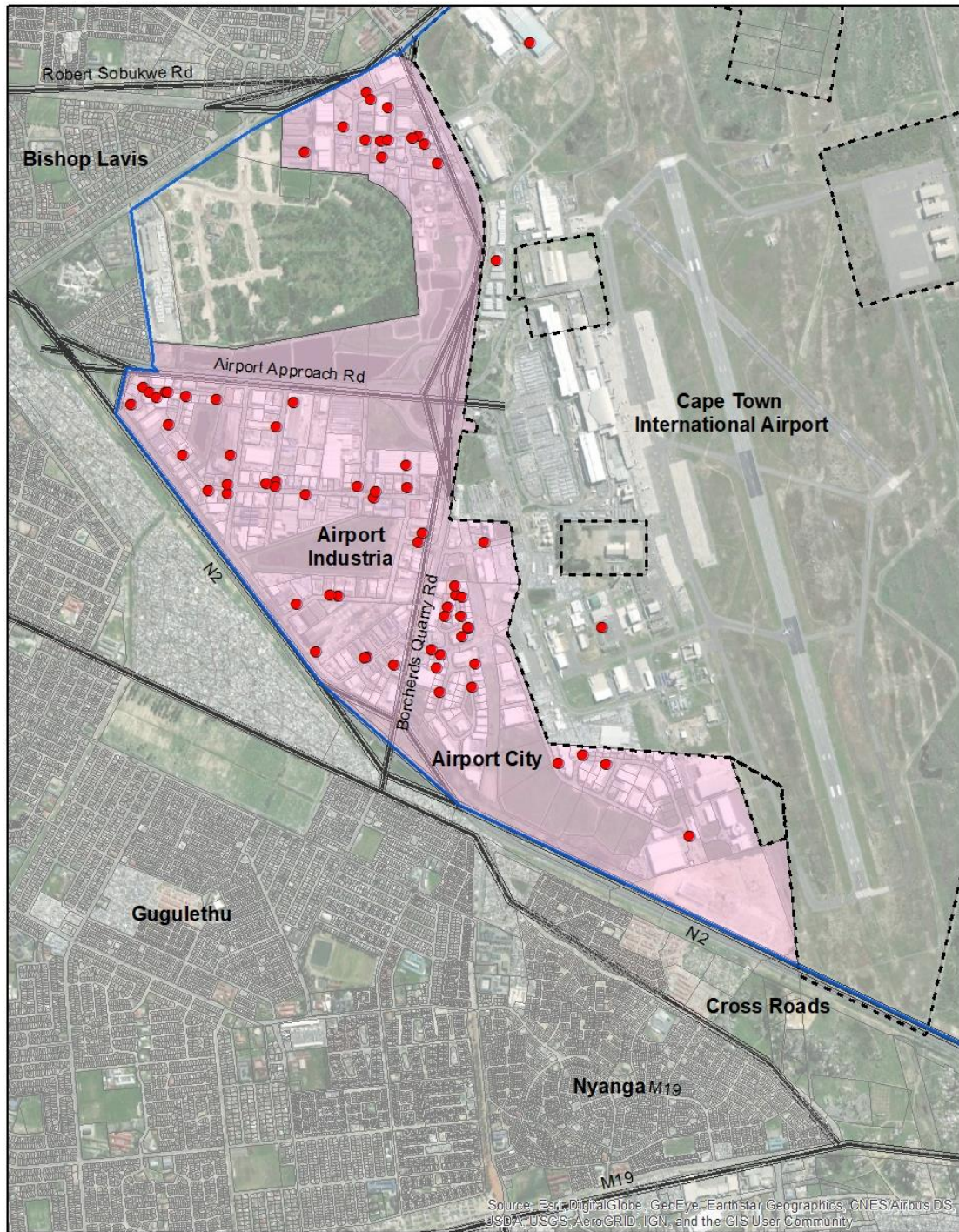
Additionally, the key informant interviews conducted with the City of Cape Town officials and Airports Company South Africa revealed that the manufacturing firms located around the airport largely engage in light manufacturing activities, which do not interfere with the landing and taking off of the aircraft. For instance, the firms found around the airport have no big towers that would potentially interfere with the movement of the aircraft. Therefore, the

firms located on and around Cape Town International Airport is a concentration of light manufacturing firms.

4.1.1 Spatial location of manufacturing firms

As discussed in the previous chapter, the mapping of manufacturing firms located around Cape Town International Airport was done to analyse the spatial distribution of such firms. Figure 4.1 shows the spatial location of the manufacturing firms on and around the airport.

Figure 4. 1: Spatial location of manufacturing firms around Cape Town International Airport



Source: Author

As shown in Figure 4.1, the manufacturing firms located around the airport are largely concentrated near Borchers Quarry Road and Airport Approach Road. It can therefore be observed that the manufacturing firms are not evenly distributed across the space as some areas have a high concentration of firms as compared to other areas. With respect to firm distribution, it can be noted that there are centripetal/ underlying forces that influence the firms to locate in a geographic space, and there are centrifugal forces that influence the firms to disperse across the geographic space.

For instance, the majority of the manufacturing firms are located in Airport Industria (Boquinar Industria) and few manufacturing firms are located in Airport City. A small number of firms are located on the landside of Cape Town International Airport. From the findings, it can be commented that the clusters of the manufacturing firms are concentrated in the areas that are zoned General Industrial 1 (GI1) and a few firms are situated in the landsides of Cape Town International Airport.

The database for the manufacturing firms was updated after the interviews were conducted. Figure 4.1 indicates that there are 67 manufacturing firms located on and around Cape Town International Airport as the red dots show the spatial location of a manufacturing firm. It should be noted that some of the manufacturing firms share premises/ property, as such, the red dots overlap and they were counted twice. Furthermore, during the data collection, the researcher discovered that there were new firms that are located in King Air Industria, formerly King David Country Golf Course. A point worth noting is that the database was compiled using the data obtained from google maps, Airport City Industria Improvement District and City of Cape Town raw data and the newly established firms situated in King Air Industria were included as part of the study.

4.1.2 Office structures of the manufacturing firms

The research findings reveal that the manufacturing firms located around Cape Town International Airport have multi-office structures, namely head offices, branches, parent and subsidiary and others have no multi-office structure. Table 4.2 shows the office structures of the manufacturing firms. Out of the 23 manufacturing firms interviewed, 45.5% of the firms confirmed that they have a multi-office structure and 54.5% of the firms do not have a multi-party structure, hence, they are stand-alone companies. The findings depict that most of the firms located around Cape Town International Airport are stand-alone companies. The firms

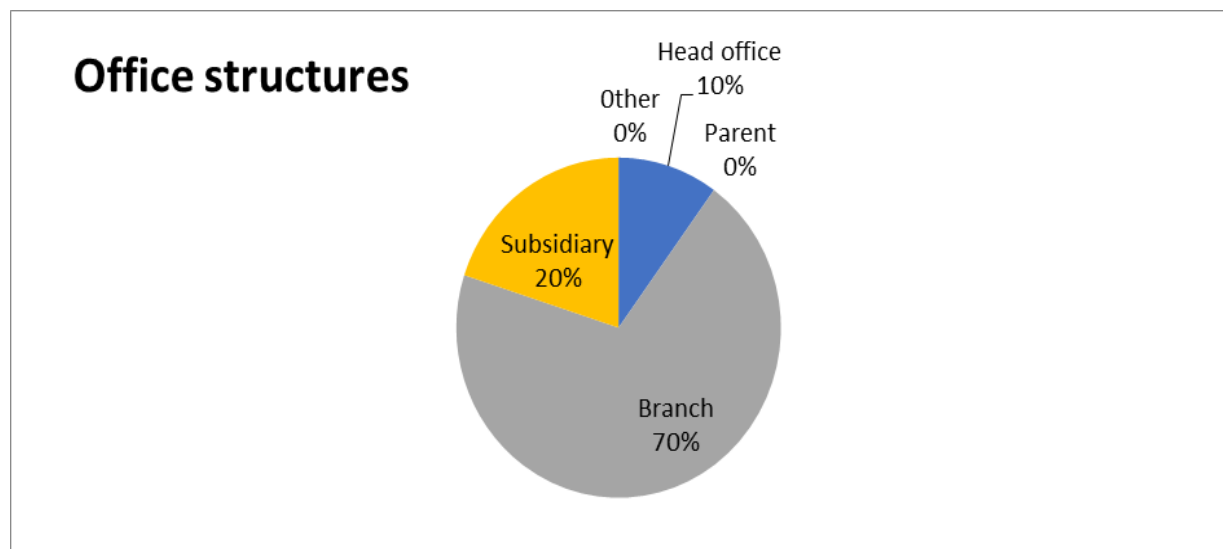
that have a multi-office structure indicate the potential internal linkages that may exist in their organisations.

Table 4. 2: Office structure of the manufacturing firms

Office structure: (head office, branch, parent and subsidiary)	Number of firms (count)	Total %
Yes	10	43.5%
No	13	56.5%
Total	23	100%

Source: Author

Figure 4. 2: Office structures of the manufacturing firms



Source: Author

Furthermore, the research findings in Figure 4.2 show that 70% of the manufacturing firms located around Cape Town International Airport are branches, 20% are subsidiary firms and 10% are head offices. From the research findings, it can be noted the majority of the firms are branches of the firms located elsewhere. The multi-office structure of the firms depicts the distribution of the economic activities within a geographic space as well as the economic space. As the majority of the firms around the airport are branches, it can be noted that the

firms around the airport are more linked to their headquarters and other branches located elsewhere.

Out of the 23 respondents of the manufacturing firms that participated in the survey, the findings presented in Table 4.3 depicts that 45.5 % of the manufacturing firms have a multi-office structure and 31 % of the headquarters are located across different provinces in South Africa. Similarly, 9.1% of the firms interviewed are subsidiaries whose parent firms are located outside South Africa. It is crucial to note that the majority of the firms that participated in the survey have a multi office structure and this depicts the linkages that exists among the firms. Mokhele (2018b) maintaians that linkages required for the realisation of the agglomeration economies. Given the nature of the linkages, , one can comment that that the linkages will result in urbanisation economies. Inter-firm linkages indicates whether firms are spatial clusters or organisational clusters.

Table 4. 3: Spatial of the manufacturing firms

Location	Number of firms with multi-office structure (count)	% (percentage)
In and around Cape Town	1	4.5%
Elsewhere in Cape Town	0	0%
Elsewhere in WC province	0	0 %
In other provinces	7	31.8%
Outside South Africa	2	9.1 %
Total	10	45.5%

Source: Author

4.1.3 Communication between branches and headquarters, subsidiaries and parent firms

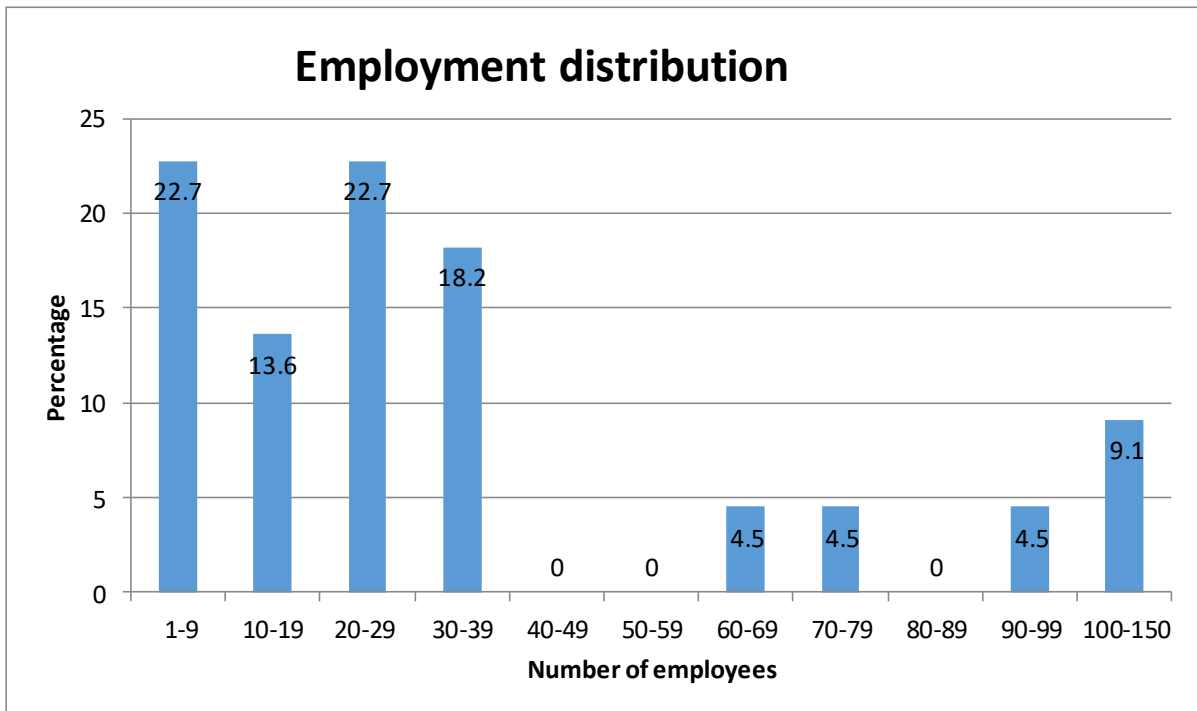
The communication between the branches and their headquarters and the subsidiary companies with their parent firms was conducted to analyse the relationship of the manufacturing firms in the geographic space and economic space. The research findings reveal that 40.9 % of the firms that are branches and subsidiaries confirmed that they

communicate with their headquarters daily and 31.8% of the branches communicate with other branches daily. However, the findings also reveal that 4.5% of the branches communicate with other branches weekly. Therefore, the relationship between the manufacturing firms with their headquarters and the parent firms that are located elsewhere emphasises the importance of economic space. As noted by Peroux (1950), economic space is defined by the relationships which exist between economic elements. The economic spaces are characterised by three elements namely, defined by the plan, forces of attraction homogenous aggregates.

4.1.4 Number of employees

It is imperative to analyse the size of the manufacturing firms that are located around Cape Town International Airport as it in part explains the driving forces of airport centric development. Figure 4.3 shows the number of employees employed by the manufacturing firms located that participated in the survey. As shown in Figure 4.3, 22.7% of the firms employ less than 10 people, 22.7% employ less than 20 people, and 18.2% have employees between 30 and 40 people. However, 9.1% of the firms employ between 100 and 120 people. The findings suggest that the majority of the manufacturing firms located on and around Cape Town International Airport are small firms.

Figure 4. 3: Number of employment of employees



Source: Author

Table 4.4 shows that the majority of the manufacturing firms located around Cape Town International Airport have employees between the category of 1-9 and 20-29, which implies that most of the manufacturing firms are small firms. Out of 22 respondents, only two firms have employees between 100 and 150.

Table 4. 4: Number of employees of manufacturing firms

Category	Percentage (%)	Frequency (count)
1-9	26.1	6
10-19	13	3
20-29	21.7	5
30-39	17.4	4
40-49	0	0
50-59	0	0
60-69	4.3	1
70-79	4.3	1
80-89	0	0
90-99	4.3	1
100-150	9.1	2
Total	100	23

Source: Author

4.2. LINKAGES, AGGLOMERATION ECONOMIES AND CLUSTERING

The concepts of agglomeration economies, linkages and clustering were used to analyse the driving forces that drive the manufacturing firms located around Cape Town International Airport. In order to understand the agglomeration economies of the cluster of the manufacturing firms around the airport, the respondents A from the manufacturing firms were asked to confirm whether they hired or lose some of their employees to the neighbouring manufacturing firms. Out of 23 respondents who participated in the study, 13.6% confirmed that they hired employees from the surrounding firms and the majority (86.4%) of the firms have not hired employees from the neighbouring manufacturing firms. Additionally, 13.6% of the respondents - confirmed that they lost some of the employees to the surrounding firms. Table 4.5 shows the number of firms that hired employees from the neighbouring manufacturing firms. The findings reveal that the firms that are located within the same geographic location, or within the same cluster (in this case manufacturing cluster), result in the transfer of knowledge from one organisation to another. However, as the majority of the manufacturing firms do not hire employees from the neighbouring firms, it

can be commented that the majority of firms around the airport require workers with specialised skills that are not found from the neighbouring firms.

Table 4. 5: Employees hired from the neighbouring firms and the employees lost to the neighbouring firms

Manufacturing firms around Cape Town International Airport			Total
	Yes Count %	No	
a) Firms that hired employees from the neighbouring firms and firms that lost employees to the neighbouring firms	4 17.4%	19 82.6%	23 100%

Source: Author

These findings stress the importance of the agglomeration economies on the location of the firms within the same geographic space. As noted by El Makhoulfi (2013), agglomeration economies are externalities that result from the interaction of agents across the space. It should be noted that although there are positive externalities that result from colocation, there are negative externalities that are associated with the co-location of the firms. It is important to note that perhaps the manufacturing firms located around Cape Town International Airport only hire specialised employees from other firms located around the airport. However, the study did not find out whether the firms that hired skilled/ specialise employees from other manufacturing firms located around the airport.

As the agglomeration economies are interconnected with linkages, it was crucial to assess the linkages that exist between the manufacturing firms situated around the airport, and the airport itself. The current section discusses the linkages that are found within the manufacturing firms located around the airport. First and foremost, the analysis of the linkages between the firms located around the airport was done to establish whether inter-firm, inter-organisational linkages exist between the firms that are situated around the airport. As the linkages establish the interdependencies between firms, the findings reveal that the majority (78.3%) of the manufacturing firms located around the airport have business connections with other companies that are found within the same area and 22.7% of the

manufacturing firms do not have business connections with the surrounding firms. In addition to the aspect of firm linkages, the research findings revealed that face-to-face interactions are not important in business interactions, as the majority (57.9%) of the firms do not value face-to-face interactions when conducting business. Table 4.6 shows that 42.1% of the firms engage in face-to-face interactions with the neighbouring firms. Table 4.6 shows the percentage of manufacturing firms that have business interactions with neighbouring companies and the firms that do not have any business connections with the neighbouring firms.

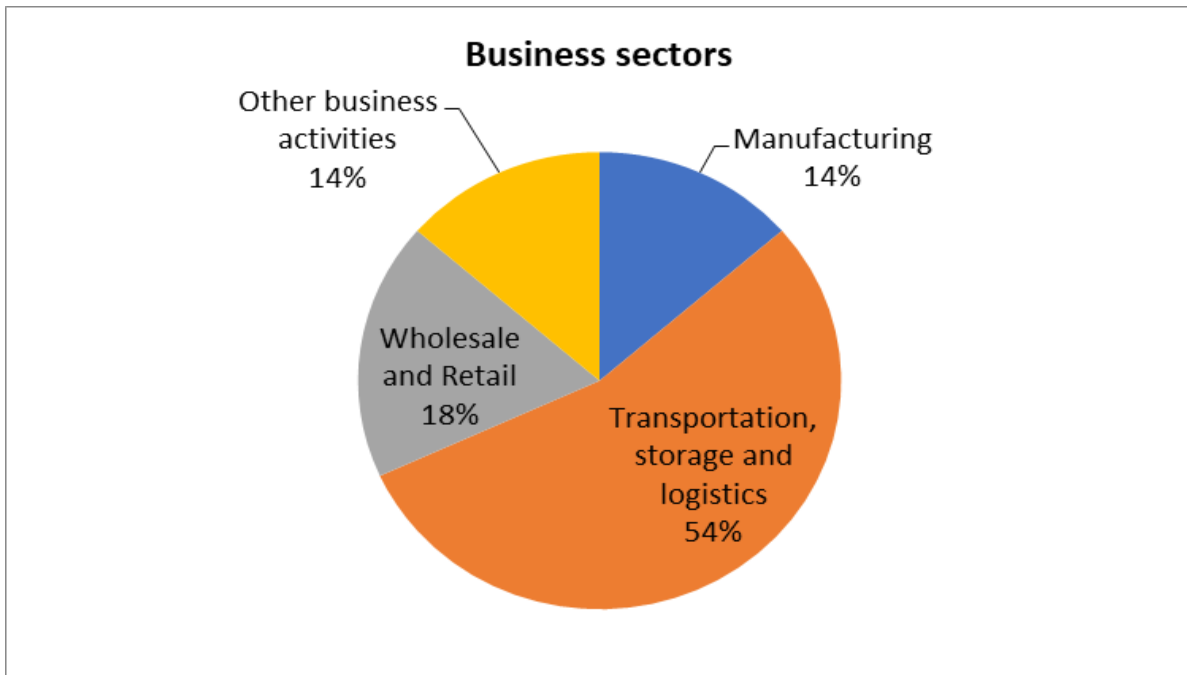
Table 4. 6: Business interaction with neighbouring firms

Firms	Yes Count %	No	Total
a) Business Interactions with neighbouring firms	18 78.3%	5 21.7%	23 100%
b) Face to face meetings	42.1%	57.9%	

Source: Author

The manufacturing firms that confirmed that they have business interaction with the neighbouring firms that engage in the following sectors: (i) manufacturing activities, (ii) transportation storage and logistics, (iii) wholesale and retail and (iv) other business activities. As shown in Figure 4.4, more than half (54%) of the transport, storage and logistics firms around the airport have business connections with the manufacturing firms that are located around the airport.

Figure 4. 4: Business linkages of the firms located around Cape Town International Airport



Source: Author

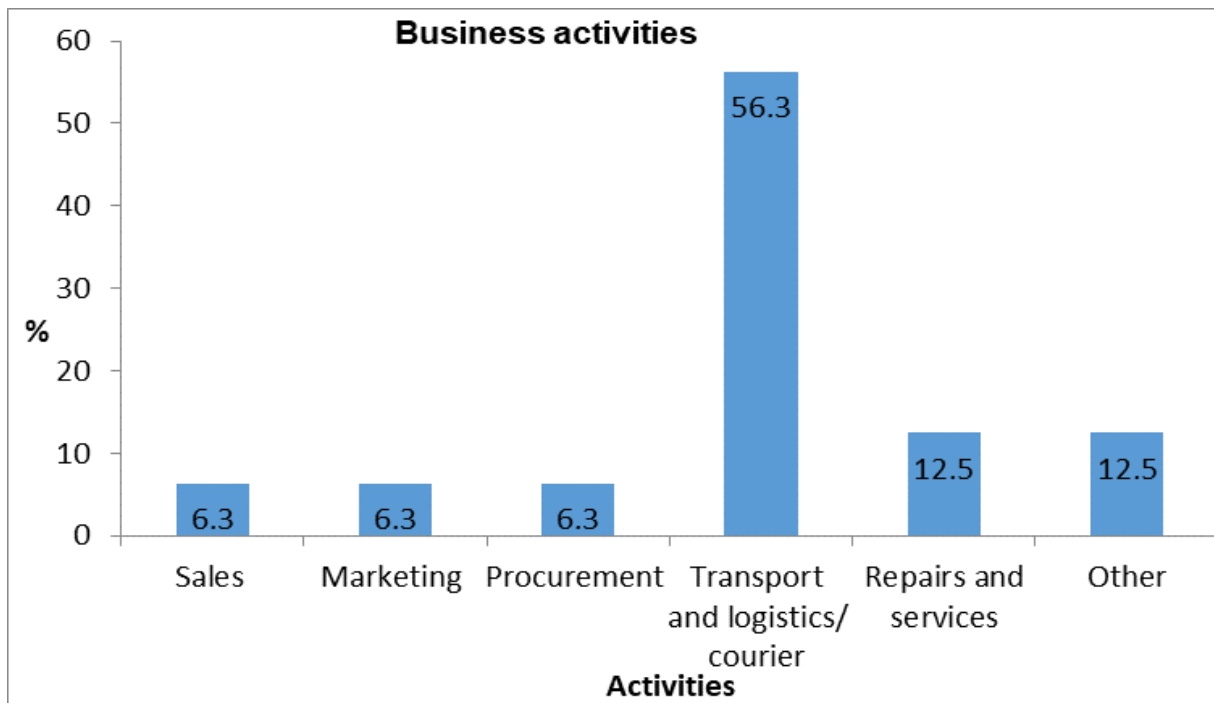
It should be noted 14% of the business interaction is of the manufacturing firms that are located around the airport, and this depicts that intra-firm linkages among the manufacturing firms are fewer than inter-firm linkages between the manufacturing firms and other firms that are located within the immediate vicinity of Cape Town International Airport. The dominance of inter-firm linkages indicates that urbanisation economies enhance the spatial clustering of economic activities within the geographic space. Borrowing from Marshal (1920), cited Claver-Cortés et.al. (2016), localisation economies are those benefits stemming from the co-location of the companies that develop the same economic activity. In this regard, the business interaction of the manufacturing firms shows fewer localisation economies stemming from intra-firm linkages of the manufacturing firms.

Therefore, the findings show that there are more inter-firm linkages than intra-firm linkages. Additionally, that transport, storage and logistics firms constitute the majority of a cluster of business activities that interact with other businesses.

To elaborate on the findings presented in Table 4.6, the business interactions that occur to the firms located around Cape Town International Airport entails intra-firm and inter-firm linkages, and their business interactions encompass sales, marketing, procurement, transport

and logistics and repairs and services. As shown in Figure 4.5 the majority (56.3%) of the face to face business interactions take place between the manufacturing firms and the transport and logistics firms. Services and repair constitute 12.5% of the business transactions between the manufacturing firms and other firms located around the airport, which is a significant amount of the activities that take place between firms located in the same geographic area. Most importantly is to note that sales, marketing and procurement constitute a very small percentage (6.3%) of the face to face business activities that take place between the manufacturing firms and the other firms that are located near Cape Town International Airport.

Figure 4. 5: Face to face business interactions



Source: Author

Furthermore, subcontracting of services depicts the inter-firm linkages of the firms that may be located within the same geographic space. Kawasaki (1998) cited in Kimura (2002) defines subcontracting as the contractual relationship between large and small firms wherein small firms conduct a commissioned work under a dominant position. By nature subcontracting of services between large and smaller firms enhance the intra-firm linkages and this will result in the development of industrial clusters. In light of the research findings shown in Table 4.7, 60.9 % of the manufacturing firms subcontract services from other companies and 39.1% of the firms do not subcontract other firms. In contrast, 52.2% of the

manufacturing firms located around Cape Town International Airport subcontract their services to other manufacturing companies.

Table 4. 7: Subcontracting of services

Subcontracting of services	Yes Count %	No Count %	Total
a) Manufacturing firms that use services of other companies as subcontractors	14 60.9%	9 39.1%	23 100%
b) Manufacturing firms that subcontract their services to other companies	12 52.2%	11 47.8%	23 100%

Source: Author

As inter-firm linkages are interconnected with agglomeration economies, the majority (47.4) of firms that are subcontracted are located elsewhere in Cape Town and a significant number (21.1%) of the firms are located on and around Cape Town International Airport. Contrary to the findings, a marginal number (5.3%) of the manufacturing firms that are subcontracted are located outside South Africa. A point worth noting is that the manufacturing firms located around Cape Town International Airport are more closely related to the firms that are located elsewhere in Cape Town.

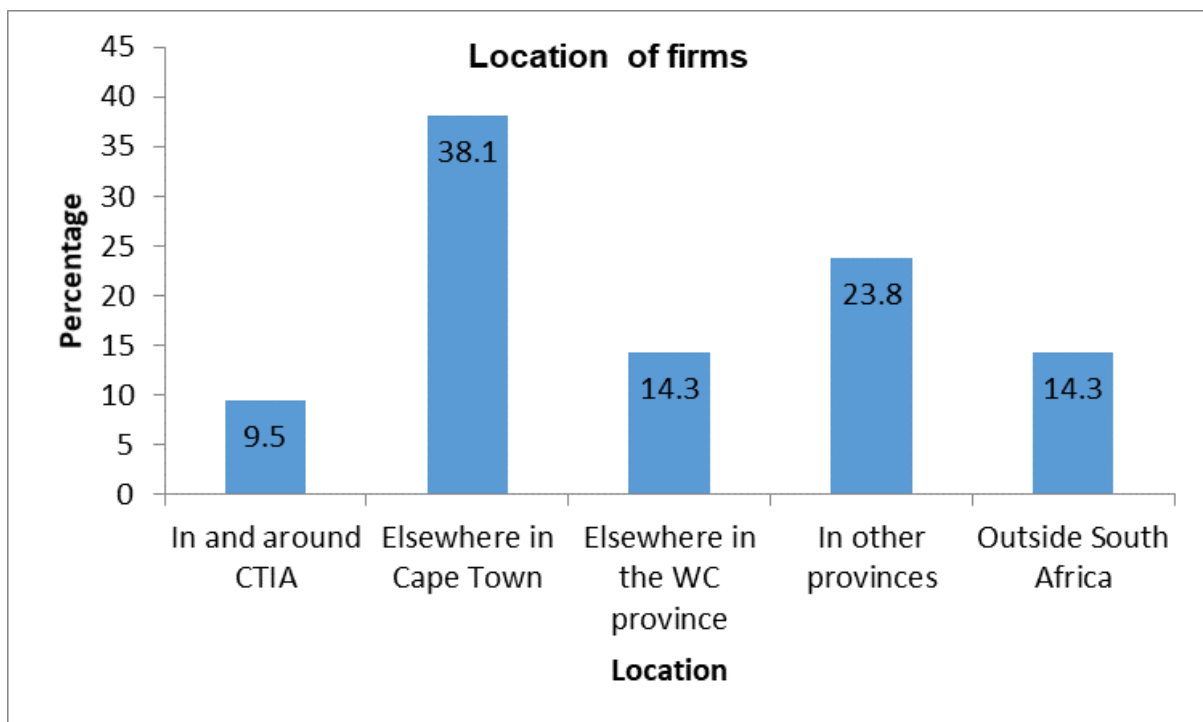
Table 4. 8: Location of subcontracted firms

Location	Frequency (count)	% (percentage)
In and around Cape Town	4	21.1%
Elsewhere in Cape Town	9	47.4%
Elsewhere in WC province	2	10.5 %
In other provinces	3	15.8%
Outside South Africa	1	5.3 %
Total	19	100 %

Source: Author

As shown in Figure 4.6, the majority (38.1%) of the manufacturing firms that subcontract the services of the manufacturing firms around Cape Town International Airport are located elsewhere in Cape Town, 23.8% of the firms are located in other provinces in South Africa. A small number (9.5%) of the firms that subcontract the services of the firms located around the airport are located around the Cape Town International Airport. It is important to note that 14.3% of the manufacturing firms that subcontract the services of the manufacturing firms are located outside South Africa. The linkages that exist between the manufacturing firms around the airport lead to the realisation of clustering of economic activities. Subcontracting of the manufacturing firms around Cape Town International Airport is a positive benefit stemming from the co-location of the firms. As noted by Claver-Cortés et.al., (2016) urbanisation economies are benefits that are derived from the concentration of the economic activities located in a place or region. As clearly shown on the findings presented in Figure 4.6 subcontracting of services is the positive externality that is derived from the co-location of the firms across Cape Town.

Figure 4. 6: Location of the firms that subcontract the services of the manufacturing firms

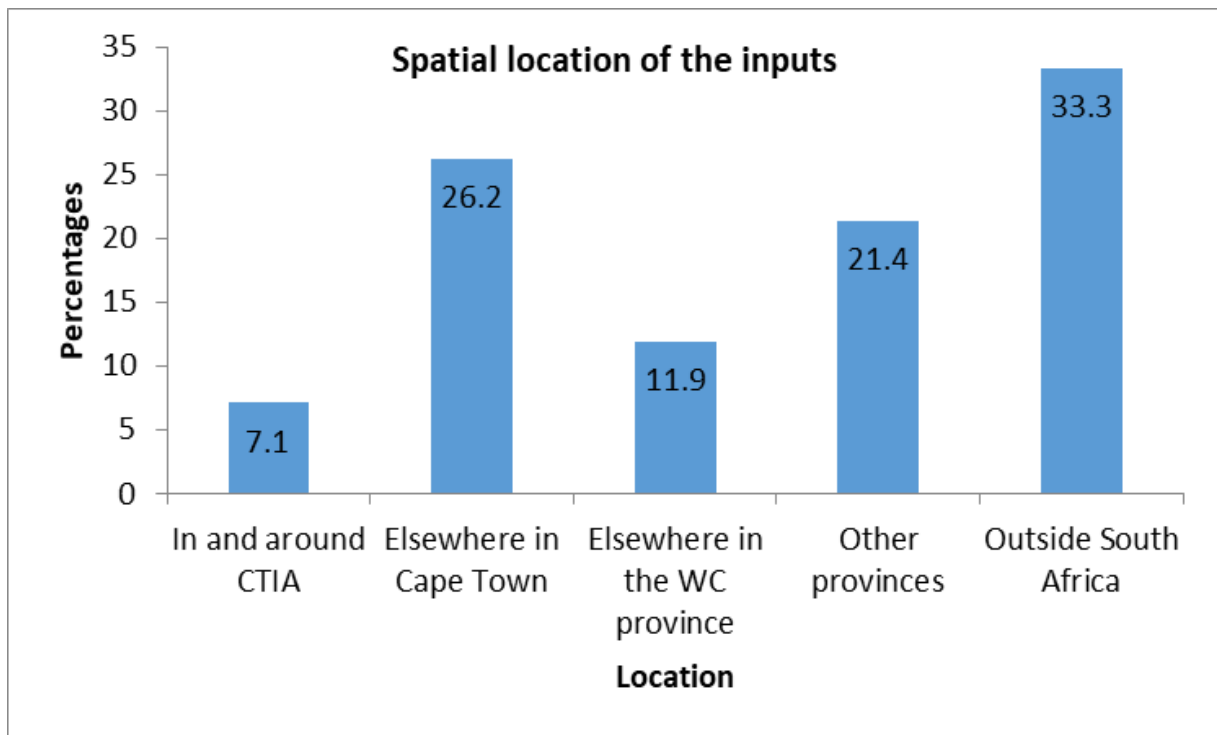


Source: Author

The survey of the manufacturing firms located around the airport also indicates that the majority (33.3%) of the manufacturing firms located around Cape Town International obtain

their inputs outside South Africa, and a slightly above the quarter (26.2%) of the manufacturing firms of the firms obtains their inputs from Cape Town, 21.4% of the firms contain their inputs from other provinces and a very small number (7.1%) of the firms obtains their inputs from the firms located in and around Cape Town International Airport. The findings reveal that geographical proximity is insignificant to the location of the manufacturing firms as the majority of the inputs are received from the firms located outside South Africa. Figure 4.7 shows the locations where the manufacturing firms located around Cape Town International Airport receive their inputs from.

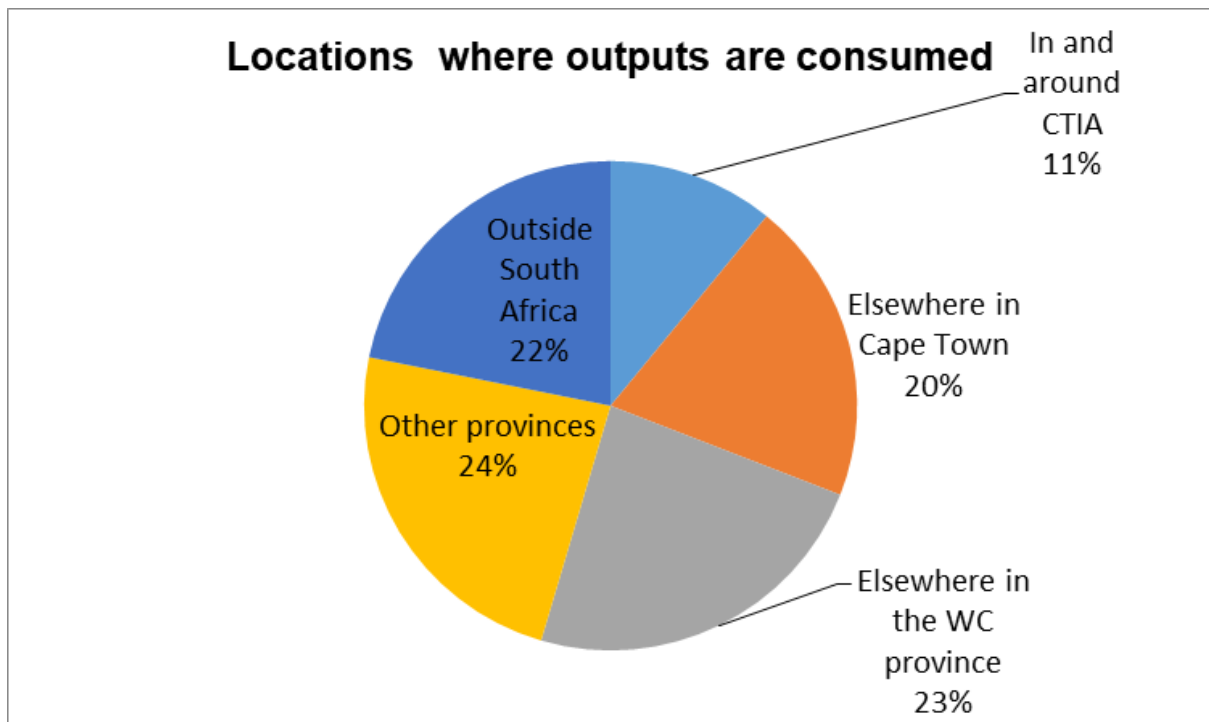
Figure 4. 7: Spatial location of the inputs used by the manufacturing firms



Source: Author

In comparison, with the spatial location of the areas where the inputs are obtained from, the research findings presented in Figure 4.8 showed that the majority of firms (24 %) of the manufacturing firms send their output to other provinces of South Africa, namely Gauteng and KwaZulu-Natal and 23% of the firms located around the airport send to other places in the Western Cape Province. Similarly, the findings reveal that geographical location is not a significant factor in the location of the manufacturing firms located around the airport as only 11% of the products are consumed locally.

Figure 4. 8: Location where outputs are consumed



Source: Author

The connection between the manufacturing firms and the airport establishes the relationship between the airport and the manufacturing firms that are located around the airport. The linkage between the airport and the surrounding firms shows whether the airport has any significance to the location of the manufacturing firms. Table 4.9 shows that the majority (56.5%) of the manufacturing firms around the airport make use of Cape Town International Airport for airfreight purposes and 43.5% of the firms do not use the airport. Additionally, 47.1% of the firms make use of the airport to receive their raw materials and 52.9% of the firms transport their raw materials using the airport. In light of the research findings presented in Table 4.7, it can be commented that Cape Town International Airport is significant to the manufacturing firms around Cape Town International Airport in transporting the finished products.

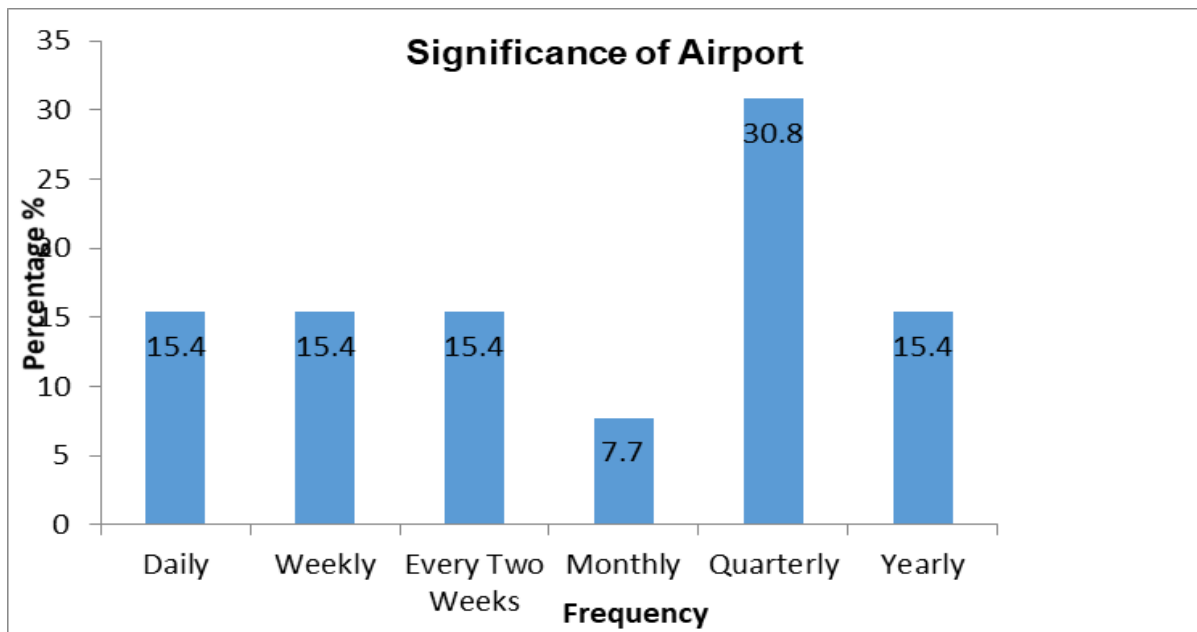
Table 4. 9: Manufacturing firms that use Cape Town International Airport

Manufacturing firms	Total (count)	% (percentage)
Firms that use CTIA	13	56.5%
Firms that do not use the airport	10	43.5%
Total	23	100%
Firms that use the airport to transport inputs/ raw materials	8	47.1 %
Firms that use the airport to ship their products	9	52.9%
Total	17	100%

Source: Author

Furthermore, it was important to analyse the frequency of the use of the airport in order to find out the significance of the airport on the location of the manufacturing firms located around the airport. It is submitted that the firms that use the airport regularly have been attracted by the existence of an airport. For instance, the firms that ship or receive their freight on a daily or weekly basis tend to be located close to the airport, and that is one of the reasons they are located close to Cape Town International Airport.

Figure 4. 9: Significance of Cape Town International Airport



Source: Author

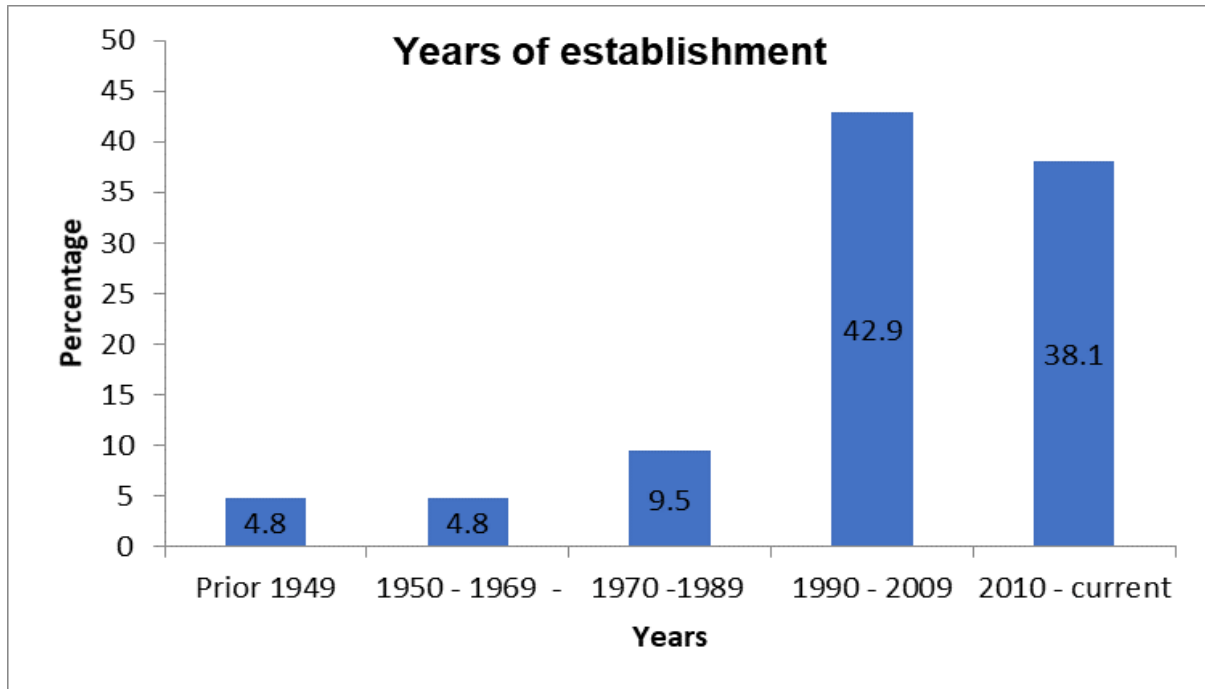
Figure 4.9 shows that the majority (30.8%) of the manufacturing firms that receive their raw materials and ship their products use the airport quarterly and a less significant number of (15.4%) of the firms use the airport daily, weekly and yearly. A smaller number (7.7%) of firms use the airport once a year. The research findings depict that a smaller number of firms use the airport daily, weekly, per fortnight and yearly. Therefore, it can be commented that the majority of the manufacturing firms do not use Cape Town International regularly; perhaps they receive their inputs from the firms located in other industrial areas across Cape Town or Western Cape Province. More importantly, the findings presented in Figure 4.9 show that the majority of the firms around the airport interact more regularly with local firms where they use other forms of transport to transport their raw materials and processed goods. In contrast to Mokhele (2018b), the Cape Town international was a significant force that influenced the location of the manufacturing firms around the airport, as the findings reveal that existence of Cape Town International Airport is insignificant to the manufacturing firms found around the airport. There are similarities with Hoare’s research as regards the geographic location of the economic activities in close proximity to Heathrow airport in the United Kingdom, wherein it was found that the airport was an insignificant to the location of the manufacturing firms, (Hoare, 1974).

4.3 DRIVING FORCES OF THE MANUFACTURING FIRMS

The driving forces of manufacturing are discussed in this section. Although the current study does not analyse the evolution of the manufacturing firms around Cape Town International Airport, it was necessary to investigate the years when the manufacturing firms were located at their current location. Out of 23 responses from the survey interviews conducted, 4.8% of the manufacturing firms confirmed that they were established in the early 1900s before Cape Town International Airport (formerly called DF Malan) was opened in 1954 and also 4.8% of the manufacturing firms confirmed that they were established in the years between 1950 and 1969. Furthermore, Figure 4.10 shows that 9.5% of the manufacturing firms located around Cape Town International Airport (CTIA) were established at their current locations.

More importantly, is to note that from the years 1990 to 2019, there was an increase in the number of manufacturing firms that were located around Cape Town International Airport (CTIA), and the majority (42.9%) of the firms were located at their current location between 1990 and 2009. Additionally, 38.1% of the manufacturing firms were located at the current premises starting from 2010 until the present date. It can be commented that a significant number of the manufacturing firms were located around Cape Town International Airport from 1990 until the current period.

Figure 4. 10: Years of the establishment of the manufacturing firms around Cape Town International Airport



Source: Author

Table 4.10 shows that more than half (54.5%) of the respondents of the manufacturing firms confirmed that prior to the current location of the firms, they were located elsewhere and 45.5% of the firms confirmed that they have been located on and around Cape Town International Airport, which implies that they were not located elsewhere before the current site. It should be noted among the firms that had previous sites, the majority (75%) of the firms were once located in other industrial sites/ business premises across Cape Town and 25% of the manufacturing firms were previously located at other business premises near Cape Town International Airport, i.e., either at Airport Industria/ Boquinar Industria or Airport City (see Table 4.11). A point worth noting is that that, the information regarding the previous location and current location of the manufacturing firms was vital as it informed the researcher whether the airport or the current location (Airport Industria or Airport City) attract the manufacturing firms to be located around the airport.

Table 4. 10: Locations of the Manufacturing firms

Manufacturing firms around CTIA	Percentage (%)	Total
Previously located elsewhere	54.5%	100%
Always been located at the current site	45.5%	

Source: Author

Table 4.11. Previous location of the manufacturing firms and levels of analysis

Firms previously located elsewhere	Levels of analysis		100%
	In and around CTIA	Elsewhere in Cape Town	
	25 %	75%	

Source: Author

Similarly, Table 4.10 shows that the majority (54.5%) of the manufacturing firms relocated from their previous business locations because of a lack of adequate space to run their business activities. For instance, some of the respondents cited that they did have adequate storage facilities. Additionally, 10% of the respondents from the manufacturing firms pointed out that they moved from their previous location as they acquired the land to build their premises. The other 10% of the respondents moved from their previous locations as they wanted their companies to be located closer to freight distribution companies. In addition, the other 10% of the firms confirmed that they moved to the current sites as they wanted to be located closer to the airport and the remaining 10% of the respondents chose the current sites as they wanted to be located. Table 4.12 shows the reasons for relocation cited by the representatives of the manufacturing firms who participated in the survey.

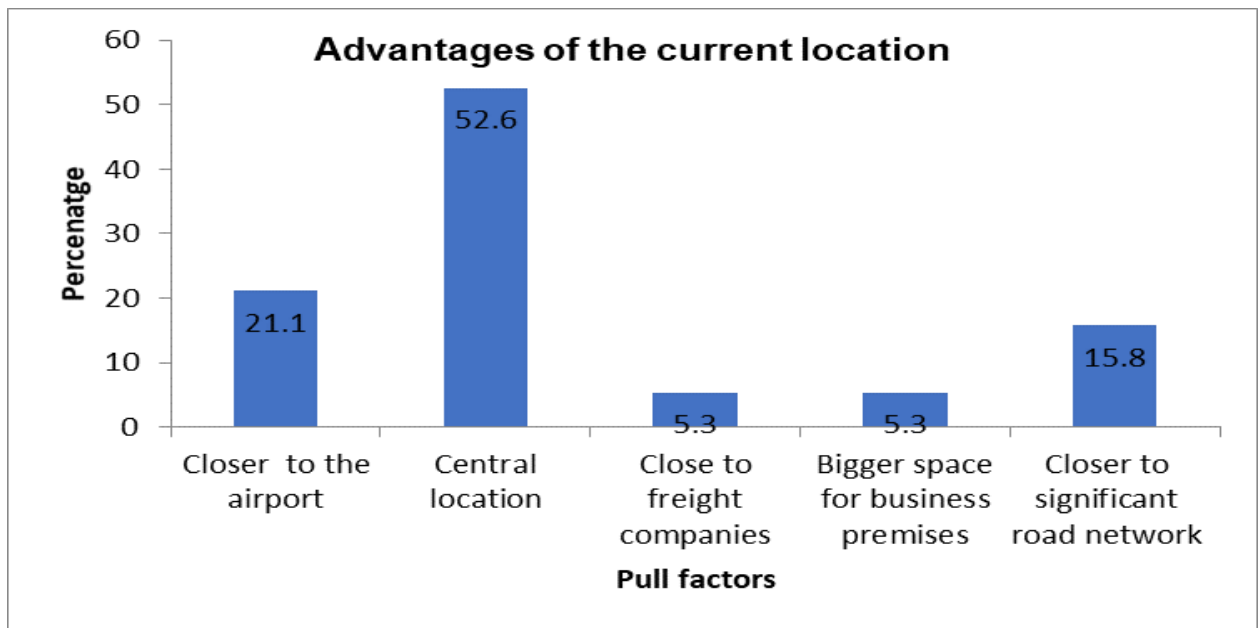
Table 4. 12: Reasons for relocation

Reasons for relocation	Frequency (count)	Percentage (%)
Acquire and build own premises	1	10
Close to the airport	1	10
Lack of space	6	60
Close to freight companies	1	10
Other	1	10
Total	10	100

Source: Author

Furthermore, it was also crucial to investigate the driving pull factors that influence the location of the manufacturing firms around Cape Town International Airport. The findings presented in Figure 4.11 show the advantages of the current locations. As shown in Figure 4.11, the majority (52.6%) of the manufacturing firms are attracted to their current location by the central location of Airport Industria and Airport City and 21.1 % of the manufacturing cited that one of the advantages of their current location is that they are now located closer to Cape Town International Airport. From Figure 4.11, it is clear that 15.8% of the manufacturing firms cited that one of the advantages emanating from the current location is that the area is close to the significant road network. However, few (5.3%) of the manufacturing firms pointed that their current locations are ideal as their firm are located close to freight distribution companies and their current premises have adequate space they require for their daily operations. It can be commented that the majority of the manufacturing firms selected their current locations, not because of the existence of the airport, but are situated there due to the centrality of the area.

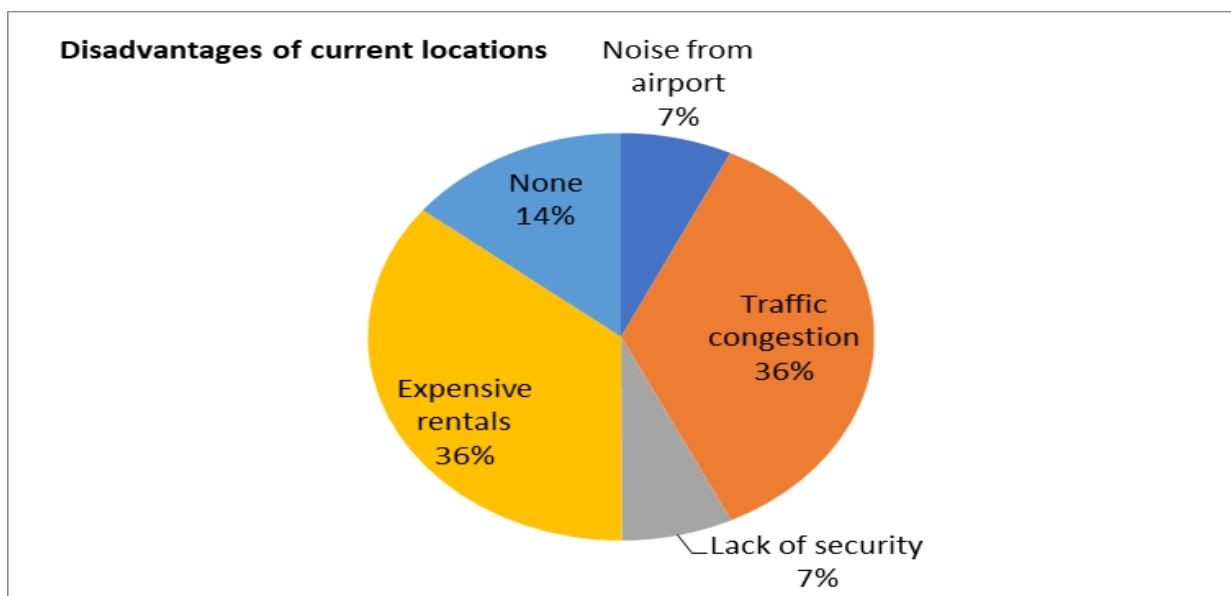
Figure 4. 11: Advantages of the current location



Source: Author

Although there are positive benefits associated with the current locations of the manufacturing firms, it was also crucial to investigate the disadvantages associated with the current location of the manufacturing firms. The disadvantages of the current location at the present premises are presented in Figure 4.12.

Figure 4. 12: Disadvantages of the current locations

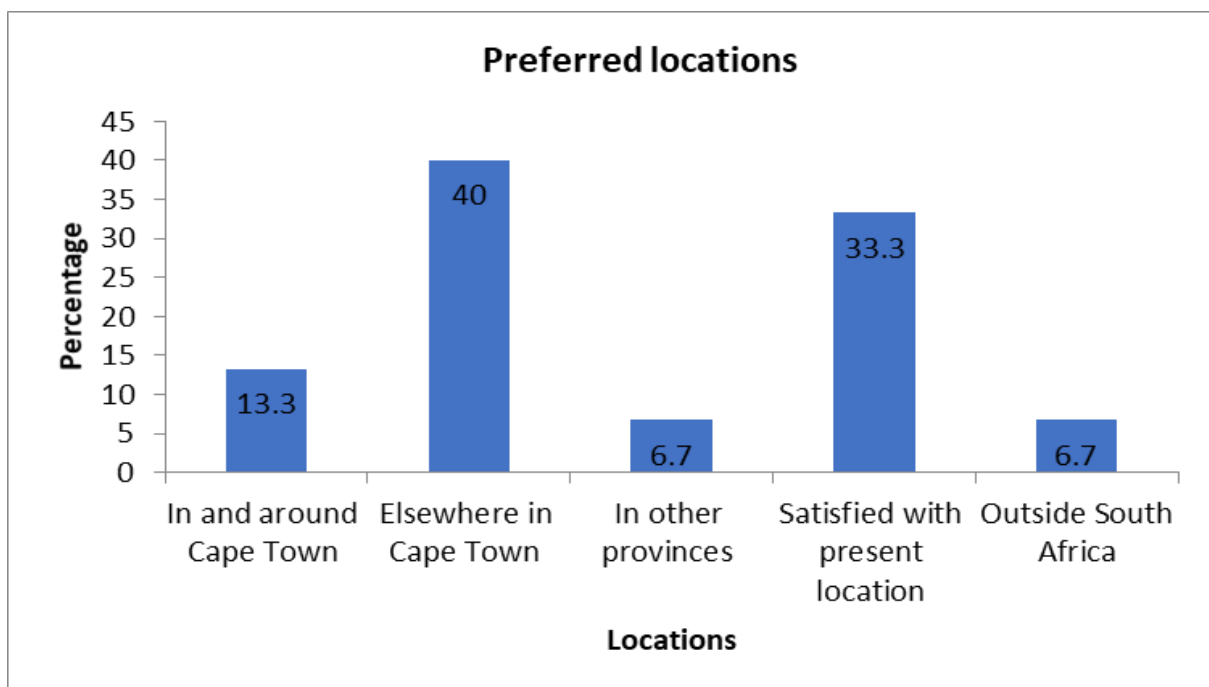


Source: Author

As shown in the pie chart, 36% of the respondents confirmed that their current locations are not ideal as they are adversely impacted by the traffic congestion and also the monthly rentals are too high. However, 14% of the respondents did have any complaints regarding the current premises, and 7% of the respondents pointed out that the area is affected by the noise generated from landing and taking off of aircraft and also the area there is lack of proper security.

As regards the importance of proximity in the location of firms within the geographic space, Figure 4.13 shows the majority (40 %) of the firms prefer to relocate to other industrial sites across Cape Town and 13.3% of the firms prefer to relocate to the neighbouring premises in and around Cape Town International Airport, i.e. they prefer to relocate from their current sites to other sites within the same area. A significant number (33.3 %) of the manufacturing firms are satisfied with their current locations and have the intention of relocating. The interesting part of the findings is that few (6.7%) of the firms interviewed prefer to relocate to other provinces in South Africa and the remaining 6.7% of the manufacturing firms prefer to relocate to other countries outside South Africa.

Figure 4. 13: Preferred location if firms relocate from their current locations



Source: Author

As shown in Table 4.1, more than half (65.2 %) of the manufacturing firms located on and around the airport do not own the premises and slightly above a quarter (34.4%) owns the premises where their companies are currently located. It can be commented that the manufacturing firms that are permanently located there, as well as those that are renting the premises, value the geographic proximity to the airport, the centrality of the location, proximity to the significant road network as well among others factors that were discussed earlier. The research findings reveal that the majority of the firms located around the airport rent the premises and only a few companies are permanently located there as they own the premises. As discussed earlier in the preceding paragraph, 40% of the firms confirmed that should they were to relocate in future; they would choose other locations around Cape Town.

Table 4. 113: Firms that own premises

	Frequency count	Percentage
Yes	8	34.8
No	15	65.2
Total	23	100

Source: Author

4.4 INSTITUTIONAL ROLES IN THE LOCATION OF THE MANUFACTURING FIRMS

Several institutions play a significant role in the location of the manufacturing firms on and around Cape Town International Airport and these include public and private institutions. As discussed in the previous chapter, the key institutions that are involved in the location of the manufacturing firms around Cape Town International Airport include the City of Cape Town, Western Cape Government, Western Cape Tourism, Trade and Investment Promotion Agency (Wesgro) and Airports Company South Africa (ACSA). However, the other institutions, namely Western Cape Government, Wesgro, Airport City Industria Improvement District (CID) and Cape Chamber of Commerce did not participate in the qualitative interviews. It should be noted that three key informant interviews were conducted with the respondents from the City of Cape Town Land Use Management department and the Economic Analysis Department and Airports Company South Africa (ACSA).

4.4.1 Roles played by the City of Cape Town and ACSA

Thematic analysis was employed in analysing the responses from the key informants regarding the roles played by different stakeholders in facilitating the location of manufacturing firms around Cape Town International Airport. The themes identified from the respondents include rezoning, coordination, development, incentives and partnerships. For instance, one of the respondents from the City of Cape Town mentioned that the City is directly involved in the processing of the development applications and ensure that they are in line with the provisions of the Municipal Planning (MPBL) and other Council policies. For example, the City of Cape Town approved rezoning applications in order to permit industrial uses. King Air Industrial was formerly a golf course (formerly called King David Golf Course) was rezoned to permit industrial development. In addition, the Land Use Management Department of the City of Cape Town plays a coordinating role once a development application is submitted. All the respondents from the City of Cape Town mentioned that the City offers investment opportunities to the manufacturing firms, but not necessarily the firms that are located at Cape Town International Airport. In terms of the partnership, the City of Cape Town engages with other stakeholders, such as WESGRO, Phillipi Economic Development Initiative (PEDI) and Airports Company South Africa in promoting the location of the manufacturing firms across the City of Cape Town.

Airports Company South Africa (ACSA) plays a key role in facilitating new urban developments around Cape Town International Airport. One of the roles they play is lobbying and influencing different stakeholders in facilitating urban development around the Airport. For instance, ACSA engaged the City of Cape Town to support the Aerotropolis Master Plan project it is undertaking. Additionally, ACSA has a real estate portfolio that identifies the vacant pockets of land not required for aeronautical purposes and commercialise the land for other purposes. The real estate division is therefore responsible for marketing the vacant portions of land and attracting commercial development to take place on those land portions. It can be commented that ASCA has no specific policy that promotes the location of the manufacturing firms around the airport as they target any form of commercial development on the identified portions of land. The respondent from ACSA confirmed that the key role played by ACSA is to protect the aviation industry from unsuitable urban development and develop a framework for the coordination of private, public and foreign direct investment.

principle of good administration shapes the built environment as any proposed development must adhere to these principles. The local municipality ensure that any development that does not comply with any of the aforementioned principles will not be approved at Council. Therefore, the planning instrument is key in shapping the airport-centric developments.

Apart from the Municipal Spatial Development framework, the Municipal Planning By-Law (MBPL, 2015, as amended 2019) was cited as one of the important policy documents that have any influence on the location of the manufacturing firms around Cape Town International Airport (CTIA). It should be noted that the Municipal Planning By-Law contains the zoning scheme, which states the zoning parameters for each property located within the City of Cape Town. With regard to zoning, the industrial areas around Cape Town International Airport are zoned General Industrial 1 (GI1). According to City of Cape Town (2019), the general industrial zonings are designed to accommodate the manufacturing process and other general industrial uses which may impact the surrounding areas. Furthermore, General Industrial 1 (GI1) zoning is zoning that is designed to accommodate all other manufacturing activities, except for hazardous or noxious manufacturing. A point worth noting is that most of the manufacturing firms located around Cape Town International Airport are either zoned General Industrial 1 (GI1) or General Business 1 (GB1). However, the majority of the properties located around Cape Town International Airport are zoned General Industrial 1 (GI1).

Furthermore, the National Civil Aviation Policy (2017) is also one of the key policies that influence land uses around airports. The policy provides a directive on how the provincial and local spheres of government are to support, integrate and leverage off-airport development for the benefit of the airport and region. It should be noted that the policy was not enacted to specifically promote the location of manufacturing firms around the airports, but it has been enacted to guide urban development in general. For instance, the word ‘manufacturing’ appears once in the entire policy document and the name ‘airport’ appears 343 times in the policy document. An attempt was made to search for ‘Cape Town International Airport and it is not mentioned in the policy. Therefore, it can be commented that the policy was enacted to guide the development around the airports across South Africa and it does not have a direct influence on the location of the manufacturing firms around Cape Town International Airport.

4.5 SUMMARY

The chapter presented the research findings from the quantitative survey interviews conducted with 23 respondents from manufacturing firms and three qualitative interviews conducted with respondents from the Land Use Management Department and Economic Analysis and Policy research in the City of Cape Town and representatives from Airports Company South Africa (ACSA) property management department. The chapter also presented the mix of the manufacturing firms and spatial distribution of the manufacturing firms that are located around Cape Town International Airport. The research findings revealed that Cape Town International Airport is not a significant factor in the location of the manufacturing firms that are found in its immediate vicinity. The next concludes the thesis.

CHAPTER 5: CONCLUSION

The previous chapter presented the findings on the institutional and spatial economic factors that influence the location of manufacturing firms on and around Cape Town International Airport in South Africa. The current chapter concludes the research conducted, and subsequently discusses the extent to which the thesis addressed the research objectives and the underlying research problem. The chapter is structured into four sections. Section 5.1 presents the synthesis of the findings; Section 5.2 describes the potential contribution to practice, specifically with regard to development planning; Section 5.3 concludes the thesis by demonstrating the extent to which the research aim and questions were addressed. Section 5.4 provides recommendations on potential areas for future research.

5.1 SYNTHESIS OF THE FINDINGS

The thesis analysed spatial economic and institutional factors that influence the location of manufacturing firms in the proximity of Cape Town International Airport. It is important to note that the interplay between linkages (horizontal and vertical), agglomeration economies (localisation and urbanisation), proximity (organisational and spatial), space (geographic and economic) and various policies and actors influence the location of manufacturing firms. As reported in Chapter Four, manufacturing firms around the airport rely on a combination of geographical and organisational proximity to facilitate inter-firm and intra-firm linkages. Linkages that involve firms that are geographically proximate result in the realisation of agglomeration economies within the study area and at a broader municipal area. This is important towards the establishment of a spatial cluster around the airport, with a significant number of the firms utilising the airport for airfreight services.

With regard to institutional factors, it was discovered that the existing policy framework at municipal, provincial and national levels are generic and not explicit on the location of manufacturing firms or other economic sectors. For instance, although the City of Cape Town Municipal Spatial Development Framework and Tygerberg District Plan are in place, they are no specific strategies that focus on the location of manufacturing firms either in the proximity of Cape Town International Airport or elsewhere in the metropolitan area. Although the zoning of the land in the vicinity of the airport supports the location of manufacturing firms, more attention is required pertaining to the policies and strategies that

explicitly focus on different sectors of the economy, including the location of manufacturing activities.

5.2 CONTRIBUTION TO PRACTICE

The research findings synthesised above could potentially contribute to development planning at different levels. Firstly, it was discovered that at the local level, there are no specific policies or frameworks that promote the location of manufacturing firms around airports. Efforts must therefore be directed towards promoting the concentration of airport-related manufacturing establishments and other related activities. For instance, incentives could be offered to the firms that utilise airfreight services to locate in the proximity of airports. This would in part contribute towards improving the efficiencies of such firms. Relatedly, relevant stakeholders (e.g. provincial government, airport authorities and municipalities) must formulate policies, frameworks and strategies that specifically promote the location of manufacturing firms in the proximity of airports.

In addition, the planning of the environs of airports must not be approached in isolation as airport-centric firms have linkages with firms that are in different sectors and located in different areas, beyond the immediate surrounds of airports. In this regard, a holistic approach is required to formulate policies that integrate various sectors of the economy across different scales, namely local, regional, national and even international. Such policies should among others enhance inter-sectoral and intra-sectoral linkages of the establishments located in different places.

5.3 CONCLUSIONS

Four objectives were formulated towards achieving the overarching research aim and accordingly the problem. For ease of reference, indication is provided below of the main sections where the objectives were addressed in the thesis. The synopsis below should be closely read with Figure 1.1, presented in Chapter One.

- a) The first objective of the study was to establish the types / composition of the manufacturing firms located on and around Cape Town International Airport. The objective was addressed in Chapter Four, Section 4.1.

- b) The second objective of the study was to analyse the relationship between manufacturing firms and other firms on and around Cape Town International Airport, and with firms located at municipal, provincial, national and international scales. This objective was addressed in Chapter Four, Sections 4.2 and 4.3.
- c) The third objective was to analyse the influence of spatial economic factors on the location of manufacturing firms on and around Cape Town International Airport. This objective was addressed in Chapter Four, Sections 4.2 and 4.3.
- d) The fourth objective was to establish the role of relevant institutions in facilitating the location of manufacturing firms on and around Cape Town International Airport. The objective was addressed in Chapter Four, Section 4.4.

The foregoing synopsis shows that the thesis addressed the research objectives, accordingly answered the research questions, and all in all realised the overarching research aim.

5.4 POTENTIAL AREAS FOR FURTHER RESEARCH

Further research is required to improve the understanding of the driving forces of airport-centric development generally and airport-centric manufacturing firms specifically. The following are potential areas for future research on the topic:

- 1) As the study was mainly focusing on the institutional and spatial economic influence on the location of the manufacturing firms around Cape Town International Airport, further investigations are required on how the same forces (institutional and spatial-economic factors) influence manufacturing firms around other airport precincts in South Africa and beyond.
- 2) Further investigation is required on the studies of the influence of the institutional and spatial economic factors on the manufacturing industry clusters located on and around other industrial sites, rather than focusing on the airport-centric manufacturing clusters.
- 3) Further investigations are required on the role of the public-private arrangements in the establishment of the manufacturing firms around airports in South Africa.

- 4) Further investigations are required on the studies that analyse the evolution regarding the location of the manufacturing firms which are found on and around Cape Town International Airport, as the existing literature analyse the evolution of various airport-centric firms located around Cape Town International Airport.

REFERENCES

- Abend, G., 2008. The meaning of 'theory'. *Sociological Theory*, 26(2), pp.173-199.
- ACSA (Airports Company South Africa (2019): Airports Company South Africa Annual Report. 2019. Bedfordview: ACSA.
- Aguiléra, A., Lethiais, V. and Rallet, A., 2012. Spatial and non-spatial proximities in inter-firm relations: an empirical analysis. *Industry and Innovation*, 19(3), pp.187-202.
- Appold, S. J., and Kasarda, J. D., 2013. The Airport City Phenomenon: Evidence from Large US Airports. *Urban Studies*, 50(6), 1239–1259.
<https://doi.org/10.1177/0042098012464401>
- Babbie, E., 2007. *The Practice of Social Research* (11th ed). Belmont CA: Thompson Wadsworth.
- Bednarek, J.R.D., 2001. *America's airports: airfield development, 1918-1947* (No. 1). Texas A&M University Press.
- Blanton, W., 2004. On the airfront. *Planning*, 70(5), 34-36
- Boloukian, R. and Siegmann, J., 2016. Urban logistics; a key for the airport-centric development—A review on development approaches and the role of urban logistics in comprehensive airport-centric planning. *Transportation Research Procedia*, 12, pp. 800-811.
- Boschma, R., 2005. Role of proximity in interaction and performance: Conceptual and empirical challenges. *Regional Studies*, 39(1), 41-45.
- Callanan, J., 2016. Impact of aerotropolis on urban growth and related commercial activity. In 22nd Annual Pacific-Rim Real Estate Society Conference (pp. 17-20).
- Capello, R., 2011. Location, regional growth and local development theories. *Aestimum*, 1-25.
- Charles, M.B., Barnes, P., Ryan, N. and Clayton, J., 2007. Airport futures: Towards a critique of the aerotropolis model. *Futures*, 39(9), 1009-1028.
- Cidell, J., 2015. The role of major infrastructure in subregional economic development: an empirical study of airports and cities. *Journal of Economic Geography*, 15(6), 1125-1144.
- City of Cape Town, 2018. City of Cape Town Municipal Spatial Development Framework. Retrieved from
<https://resource.capetown.gov.za/documentcentre/Documents/City%20strategies%2C>

- %20plans%20and%20frameworks/CT_Metropolitan_Spatial_Development_Framework.pdf
- City of Cape Town, 2019, Municipal Planning By-Law Amended 2019, retrieved from http://sfb.org.za/images/public_participation/Draft%20City%20of%20Cape%20Town%20Municipal%20Planning%20Amendment%20Bylaw.pdf
- City of Cape Town., 2012. Tygerberg District Plan. Retrieved from https://resource.capetown.gov.za/documentcentre/Documents/City%20research%20reports%20and%20review/Tygerberg_District_Plan_Technical_Report.pdf
- City of Ekurhuleni, 2018. Aerotropolis Ekurhuleni: Gauteng City Region. Directorate: Communications and Branch Management, Germiston.
- Claver-Cortés, E., Marco-Lajara, B. and Manresa-Marhuenda, E., 2016. Types of agglomeration economies: effects on business innovation. *Contemporary Economics*, 10(3), pp.217-232.
- Coetzee, P.J.V.V. and Swanepoel, P.A., 2017. Spatial relationships and movement patterns of the air cargo industry in airport regions. *Journal of Transport and Supply Chain Management*, 11(1), 1-10.
- Conklin, M.R. and Goldstein, H.T., 1955. Census principles of industry and product classification, manufacturing industries. In *Business Concentration and Price Policy* (pp. 15-55). Princeton University Press.
- Creswell, J.W., 2014. *Qualitative, quantitative and mixed methods approaches*. Sage.
- de Jong, B., Suau-Sanchez, P. and Dross, M., 2008. Towards a relational planning approach? Case studies in the airport regions of Amsterdam, Barcelona and Munich. In 4th Joint Congress of the Association of Collegiate Schools of Planning (ACSP) and the Association of European Schools of Planning (AESOP), Chicago, USA (6-11 July 2008).
- Department of Transport. (2017). *White Paper on National Civil Aviation Policy*. Government Printers; Pretoria (Volume 263).
- Díez-Pisonero, R., 2019. Airports and cities in the context of globalisation: A multidimensional symbiosis in Adolfo Suárez-Madrid Barajas Airport. *The Geographical Journal*, 185(4), pp.485-497.
- Dube Tradeport., 2017/18. Dube Tradeport Special Economic Zone. Retrieved from <https://www.dubetradeport.co.za/SiteFiles/152060/Dube%20TradePort%20Special%20Economic%20Zone%20-%20Investment%20Brochure%202018.pdf>

- Economics, D.A., 2012. Connecting Australia: The Economic and Social Contribution of Australia's Airports. Deloitte Access Economics.
- El Makhoulfi, A., 2013. *Spatial-Economic metamorphosis of a Nebula City: Schiphol and the Schiphol region during the 20th Century*. Routledge.
- Elden, S., 2009. Space I. International encyclopedia of human geography, 10, pp.262-267.
- Fan, C.C. and Scott, A.J., 2003. Industrial agglomeration and development: a survey of spatial economic issues in East Asia and a statistical analysis of Chinese regions. *Economic Geography*, 79(3), pp.295-319.
- Flores-Fillol, R., Garcia-López, M.À. and Nicolini, R., 2016. Organization of land surrounding airports: The case of the aerotropolis. *Land Economics*, 92(1), pp.57-81.
- Fraenkel, J.R., Norman E.W., and Helen H.H. 2012. How to design and evaluate research in education.
- Freestone, R., & Barker, D., 2011. Spatial planning models of airport-driven urban development. *Journal of Planning Literature*, 26(3), 263–279. <https://doi.org/10.1177/0885412211401341>
- Giuliano, G., Kang, S. and Yuan, Q., 2019. Agglomeration economies and evolving urban form. *The Annals of Regional Science*, 63, 377-398.
- He, C. and Zhu, S., 2016. Industrial linkage. International Encyclopedia of Geography: People, the Earth, Environment and Technology: People, the Earth, Environment and Technology, pp.1-2.
- Hoare, A. G., 1974. International Airports as Growth Poles: A Case Study of Heathrow Airport (Issue 63). <https://about.jstor.org/terms>
- Karlsson, J., Ludders, R.J., Wilde, D., Mochrie, D., and Seymour, C., 2008. Airport economic impact methods and models. A synthesis of airport practice. Airport Cooperative Research Program (ACRP) Synthesis, 7.
- Kasarda, J.D. (2010). Airport cities and the aerotropolis: The way forward. Global airport cities, ed. J. Kasarda, pp.1-31.
- Kasarda, J.D. and Canon, M.H., 2016. Creating an Effective Aerotropolis Master Plan. *Regional Economic Review*, 5, 42-59
- Kasarda, J.D., 2006. Airport cities and the aerotropolis. Im Internet under: http://www.aerotropolis.com/files/2006_07_Airport-Cities.pdf [Stand: 12.05. 2007].
- Kasarda, J.D., 2008. The evolution of airport cities and the aerotropolis. Dalam JD Kasarda, *Airport Cities, The Evolution*. London: Insight Media.

- Kasarda, J.D., 2015. Welcome to Aerotropolis, the City of the Future. *New Perspectives Quarterly*, 32(3), 43-45.
- Kimura, F., 2002. Subcontracting and the performance of small and medium firms in Japan. In *Small Firm Dynamism in East Asia* (pp. 163-175). Springer, Boston, MA.
- Knippenberger, U., 2010. Airport-region governance. In *Airports in Cities and Regions: Research and Practise: 1st International Colloquium on Airports and Spatial Development*, Karlsruhe, 9th-10th July 2009. KIT Scientific Publishing.
- Knoben, J., and Oerlemans, L.A., 2006. Proximity and inter-organizational collaboration: A literature review. *international Journal of management reviews*, 8(2), pp.71-89.
- Kothari, C.R., 2004. *Research methodology: Methods and techniques*. New Age International.
- Kraak, M.J., 1999. Visualising spatial distributions. *Geographical information systems*, 1, 157-173.
- Krugman, P., 1998. What's new about the new economic geography?. *Oxford Review of Economic Policy*, 14(2), 7-17.
- Krugman, P., 2011. The new economic geography, now middle-aged. *Regional Studies*, 45(1), 1-7.
- Leedy, P.D. and Ormrod, J.E., 2015. *Practical research: Planning and design*. Pearson.
- Lefebvre, H. and Nicholson-Smith, D., 1991. *The production of space* (Vol. 142). Oxford: Basil Blackwell:
- Leinbach, T.R. and Bowen Jr, J.T., 2004. Air cargo services and the electronics industry in Southeast Asia. *Journal of Economic Geography*, 4(3), 299-321.
- Levinson, M., 2017. What Is Manufacturing? Why Does the Definition Matter?
- Leary-Owhin, M., 2015. A fresh look at Lefebvre's spatial triad and differential space: A central place in planning theory?. In *2nd Planning Theory Conference University of the West of England* (pp. 1-8).
- Litvinenko, I.L., Kaminskaya, A.S., Prokhorova, V.V., Belova, E.O., Shutilov, F.V. and Sheludko, E.B., 2016. The economic space in the region: the theoretical approaches to the study. *International Review of Management and Marketing*, 6(1S).
- Lunenburg, F.C. and Irby, B.J., 2008. *Writing a successful thesis or dissertation: Tips and strategies for students in the social and behavioural sciences*. Corwin Press.
- Luthuli, N. and Haughton, J., 2019. Towards regional economic development in South Africa: Conceptualising the 'region' associated with economic development through the

- Durban Aerotropolis”. *Urbani Izziv*, vol. 30, *Urbanistični inštitut Republike Slovenije*, 2019, pp. 194–211, <https://www.jstor.org/stable/26690832>.
- MacKinnon, D. and Cumbers, A., 2019. *An introduction to economic geography*. Routledge.
- Mazúr, E. and Urbánek, J., 1983. Space in geography. *GeoJournal*, 7(2), 139-143.
- Milner, C., Reed, G. and Talerngsri, P., 2006. Vertical linkages and agglomeration effects in Japanese FDI in Thailand. *Journal of the Japanese and international Economies*, 20(2), 193-208.
- Mokhele, M., 2016. Spatial economic attributes of airport-centric developments in Cape Town and Johannesburg. PhD Dissertation. Stellenbosch University.
- Mokhele, M., 2017. Spatial economic evolution of the airport-centric developments of Cape Town and OR Tambo international airports in South Africa. *Town and Regional Planning*, (70), pp.26-36.
- Mokhele, M., 2018a. The volatility of institutional arrangements that influence development: The case of Bram Fischer International Airport in South Africa. *The Journal for Transdisciplinary Research in Southern Africa*, 14(1).
<https://doi.org/10.4102/td.v14i1.436>
- Mokhele, M., 2018b. Spatial economic attributes of OR Tambo and Cape Town airport-centric developments in South Africa. *Journal of Transport and Supply Chain Management*, 12(1), a344. a344. <https://doi.org/10.4102/jtscm.v12i0.344>
- Molotch, H., 1993. The space of Lefebvre. *Vol. 22, No. 6 (Dec., 1993)*, pp. 887-895
Springer
- Mønsted, M., 1974. Francois Perroux's Theory Of “Growth Pole” And “Development” Pole: A Critique. *Antipode*, 6(2), 106-113.
- Nakamura, R., 2005. Agglomeration Economies and Linkage Externalities in Urban Manufacturing Industries-A Case of Japanese Cities.
- North, D.C.,1990. Institutions. *Journal of Economic Perspectives* (Vol. 5).
- Palinkas, L.A., Horwitz, S.M., Green, C.A., Wisdom, J.P., Duan, N. and Hoagwood, K., 2015. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 42(5), 533-544.
- Parr, J.B., 2002. Agglomeration economies: ambiguities and confusions. *Environment and Planning A*, 34(4), 717-731.
- Peneda, M.J.A., Reis, V.D. and Macario, M.D.R.M., 2011. Critical factors for the development of airport cities. *Transportation Research Record*, 2214(1), 1-9.

- Percoco, M., 2010. Airport activity and local development: Evidence from Italy. *Urban Studies*, 47(11), 2427-2443.
- Perroux, F., 1950. Economic space: theory and applications. *The Quarterly Journal of Economics*, 64(1), 89-104.
- Philbeck, T., and Davis, N., 2018. The fourth industrial revolution. *Journal of International Affairs*, 72(1), 17-22.
- Porter, M.E., 2000. Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly*, 14(1), 15-34.
- Prosperi, D.C., 2007. Airports as centers of economic activity: Empirical evidence from three US metropolitan areas (pp. 215-224).
- South Africa (Republic of), 2013. Spatial Planning and Land Use Planning Management Act (SPLUMA) (Act 16 of 2013). Government Printers, Cape Town
- Rodrigue, J.P., 2020. *The geography of transport systems*. Routledge.
- Roseau, N., 2012. Airports as urban narratives: Toward a cultural history of the global infrastructures. *Transfers*, 2(1), 32-54.
- Scallan, P., 2003. Process planning: the design/manufacture interface. Elsevier.
- Schaafsma, M., 2009. From Airport City to Airport Corridor. Airport and City, Sustainability and economy [w:] Airports in Cities and Regions. Research and Practice, eds. U. Knippenberger, A. Wall. In 1st International Colloquium on Airports and Spatial Development, Karlsruhe.
- Schlaack, J., 2010, 'Defining the Area. Evaluating urban output and forms of interaction between airport and region', in U. Knippenberger & A. Wall (eds.), Airports in cities and regions: Research and practise, pp. 113–125, KIT Scientific Publishing, Karlsruhe.
- Schwab, K., 2017. *The fourth industrial revolution*. Currency.
- Schwartz-Shea, P., and Yanow, D., 2012. *Interpretive Research Design: Concepts and Processes*. London: Routledge.
- Scott, A.J. 1988. New industrial space: Flexible production organization and regional development in North America and Western Europe. London: Pion Limited.
- Shah, M.N., and Sanjeevani, S., 2013. A Case Of Airport Cities In India: An Economic Development Perspective. *NICMAR-Journal of Construction Management*, 28(1), 53-66.
- Shakir, M., 2002. The selection of case studies: strategies and their applications to IS implementation case studies

- Shen, D., and Cao, Y., 2016. Aerotropolis formation and evolution: insights from new economic geography. *International Journal of Sustainable Development*, 19(3), 246-256.
- Smirnov, O.A., 2016. Geographic space: an ancient story retold. *Transactions of the Institute of British Geographers*, 41(4), 585-596.
- South Africa (Republic of) 2020. South Africa Year Book 2020/2021. Government Systems. Available on <https://www.gov.za/about-government/government-system/local-government>[Accessed 16 February 2022].
- South Africa (Republic of) 1996. Constitution of the Republic of South Africa Act 108 of 1996. Available on <https://www.gov.za/sites/default/files/images/a108-96.pdf> [Accessed 16 February 2022].
- South Africa (Republic of) 1998. Municipal Structures Act 117 of 1998. Available on <http://francesbaard.gov.za/wp-content/uploads/2015/03/Municipal-Structures-Act.pdf> [Accessed 16 February 2022].
- South African Government. Department of Trade and Industry, 2019. Facts and figures on skills in manufacturing.
- Stangel, M., 2011. Airport-related spatial development-global tendencies and Katowice airport area perspectives. *ACEE Journal-Silesian University of Technology* (1), 15-24.
- Statistics South Africa., 2012. Standard industrial classification of all economic activities (SIC). 7th .ed. Pretoria. Statistics South Africa.
- Steyn, J.N., and Mhlanga, O., 2016. The impact of international air transport agreements on airline operations in southern Africa.
- Struyk, R.J., and James, F.J., 1975. *Intrametropolitan industrial location: The pattern and process of change*. Lexington, Massachusetts: Lexington Books.
- United States. Department of Housing and Urban Development. Office of International Affairs U.S. Government Printing Office, 1974. *Airports*.
- Vaismoradi, M., Turunen, H. and Bondas, T., 2013. Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences*, 15(3), 398-405.
- Van Boxtel, M., and Huys, M., 2005. ‘Unravelling decision making about the future developments of Amsterdam Airport Schiphol’, paper prepared for the 45th European Regional Science Association, Amsterdam, 23–27 August.
- Van Wijk, M., 2007. *Airport as City Regions in the City Region*, *doctorial thesis*, Utrecht; Utrecht University.

- Van Wijk, M., 2008. Development of airport regions: Varieties of institutions in Schiphol and Frankfurt. *Airlines, e-zine edition*, 40, 1-5.
- Visser, P.S., Krosnick, J.A., and Lavrakas, P.J., 2000. Survey research.
- Vleugel, J., 2005. Clusters and spatial planning-Towards a research program.
- Wang, D., Gong, Z. and Yang, Z., 2018. Design of industrial clusters and optimization of land use in an airport economic zone. *Land Use Policy*, 77, 288-297
- Wang, D., Zhao, X., Shen, L., and Yang, Z., 2020. Industry choice for an airport economic zone by multi-objective optimization. *Journal of Air Transport Management*, 88, 101872.
- Wang, K.J., and Hong, W.C., 2011. Competitive advantage analysis and strategy formulation of airport city development—The case of Taiwan. *Transport Policy*, 18(1), 276-288.
- Weber, A., and Friedrich, C.J., 1929. Alfred Weber's theory of the location of industries.
- World Bank., 2003. World Development Report 2003. Sustainable Development in a Dynamic World--Transforming Institutions, Growth, and Quality of Life. World Bank., New York City; Oxford University Press.
- Yin, R.K., 2017. *Case study research and applications: Design and methods*. Sage publications.

ANNEXURE A

Date of Interview: _____
 Name of Firm: _____
 Physical Address: _____
 Name of Respondent: _____
 Position: _____
 Interviewer: _____

Q1 What manufacturing activities does your company engage in?	Specify activities of company										
Q2 Does your company have any of the following structures: head office & branch; parent & subsidiary; or multiple offices? [If 'No', Go to Question 7]	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Yes</td> <td style="width: 20%;"></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes		No							
Yes											
No											
Q3 Is your location a head office, parent, branch, subsidiary or other?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 80%;">Head office</td><td style="width: 20%;"></td></tr> <tr><td>Parent</td><td></td></tr> <tr><td>Branch</td><td></td></tr> <tr><td>Subsidiary</td><td></td></tr> <tr><td>Other (specify)</td><td></td></tr> </table>	Head office		Parent		Branch		Subsidiary		Other (specify)	
Head office											
Parent											
Branch											
Subsidiary											
Other (specify)											
Q4 [If branch/ subsidiary] Where is the head office/ parent located?	Specify location										
Q5 How often does the company communicate with the head office?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 80%;">Daily</td><td style="width: 20%;"></td></tr> <tr><td>Weekly</td><td></td></tr> <tr><td>Every Two Weeks</td><td></td></tr> <tr><td>Monthly</td><td></td></tr> <tr><td>Other (Specify)</td><td></td></tr> </table>	Daily		Weekly		Every Two Weeks		Monthly		Other (Specify)	
Daily											
Weekly											
Every Two Weeks											
Monthly											
Other (Specify)											
Q6 How often does the company communicate with the (other) branches? [This applies to companies that are head offices or branches] Use 'other' for branches.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 80%;">Daily</td><td style="width: 20%;"></td></tr> <tr><td>Weekly</td><td></td></tr> <tr><td>Every Two Weeks</td><td></td></tr> <tr><td>Monthly</td><td></td></tr> <tr><td>Other (Specify)</td><td></td></tr> </table>	Daily		Weekly		Every Two Weeks		Monthly		Other (Specify)	
Daily											
Weekly											
Every Two Weeks											
Monthly											
Other (Specify)											
Q7 How many people are employed by your company, at this location?	Provide number										
Q8 Has your company hired former employees of the neighbouring companies? (i.e. companies on and around the airport)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 80%;">Yes</td><td style="width: 20%;"></td></tr> <tr><td>No</td><td></td></tr> </table>	Yes		No							
Yes											
No											
Q9 Has your company lost some employees to the neighbouring companies? (i.e. companies on and around the airport)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 80%;">Yes</td><td style="width: 20%;"></td></tr> <tr><td>No</td><td></td></tr> </table>	Yes		No							
Yes											
No											
Q10 When was your company established on this site?	Provide year										
Q11 Prior to the current site, where was your company located? [If 'b', move to Question 13]	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 80%;">a. Provide name</td><td style="width: 20%;"></td></tr> <tr><td>b. Always been here</td><td></td></tr> </table>	a. Provide name		b. Always been here							
a. Provide name											
b. Always been here											
Q12 Why did your company move from the previous location?	_____										
Q13 Why did your company choose to locate at the current location?	_____										
Q14 What are the advantages of the current location?	_____										
Q15 What are the disadvantages of the current location?	_____										
Q16 If your company were to relocate, where would it go?	_____										

Q17 Does your company own the premises (land and/ or building) occupied at the current location?

Yes	
No	

Q18 Does your company make use of Cape Town International Airport for airfreight/ cargo services?

[If 'No', Go to Question 21]

Yes	
No	

Q19 Does your company use the Cape Town International Airport to receive the input/ raw materials or ship your products?

Input/ raw material	
Products	
Other purpose (specify)	

Q20 How often does your company use Cape Town International Airport for airfreight purposes?

Daily	
Weekly	
Every Two Weeks	
Monthly	
Quarterly	
Every Six Months	
Yearly	

Q21 Does your company have business interactions with neighbouring companies i.e. companies on and around the airport?

Yes	
No	

Q22 What activities do those companies engage in?

Manufacturing	
Transportation, Storage, Logistics	
Wholesale and Retail	
Other (specify)	

Q23 Are face-to-face meetings important in the interactions with the neighbouring companies?

Yes	
No	

Q24 What do the interactions with the neighbouring companies entail?

Q25 Does your company use the services of other companies as sub-contractors

Yes	
No	

Q26 Where are those sub-contractors located?

In and around CTIA	
Elsewhere in Cape Town	
Elsewhere in the WC province	
In other provinces	
Outside South Africa	

Q27 Does your company sub-contract its services to other companies?

Yes	
No	

Q28 Where are those companies that you sub-contract to located?

In and around CTIA	
Elsewhere in Cape Town	
Elsewhere in the WC province	
In other provinces	

Outside South Africa	
----------------------	--

Q29 Where does your company get inputs/ materials to the manufacturing processes?

In and around CTIA	
Elsewhere in Cape Town	
Elsewhere in the WC province	
From other provinces	
Outside South Africa	

Q30 Where does your company send its output?

In and around CTIA	
Elsewhere in Cape Town	
Elsewhere in the WC province	
Other provinces	
Outside South Africa	

Q31 How has Covid-19 pandemic affected your company?

THANK YOU FOR YOUR TIME

ANNEXURE B

Interview guide

Date:

Name of the organisation.....

Position:

Interviewer:

1. In your view, what are similarities and/ or differences between the cluster of manufacturing firms around the Cape Town International Airport and other industrial clusters around the City of Cape Town?
2. What is the role played by your organisation in facilitating development (in general) around Cape Town International Airport?
3. What is the role played by your organisation in specifically facilitating the location of manufacturing firms around Cape Town International Airport?
4. Apart from your organisation, what other institutions/ organisations are involved in facilitating development (in general) around Cape Town International Airport?
5. Which of those institutions/ organisations are involved in facilitating the location of manufacturing firms specifically?
6. What is the relationship between your organisation and other organisations involved in promoting/ facilitating development (in general) and the location of manufacturing firms (specifically) around Cape Town International Airport?
7. Which policies promote the location of the manufacturing firms around Cape Town International Airport?

8. How do those policies influence the location of the manufacturing firms around Cape Town International Airport?
9. What are policy or institutional constraints that hinder the location of manufacturing firms around the Cape Town International Airport?
10. In your opinion, what can be done to facilitate the location of the manufacturing firms around Cape Town International Airport?

ANNEXURE C



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Tess Kotze
DEVELOPMENT MANAGEMENT DEPARTMENT
Section Head: Land Use Management
Tygerberg District

T: 021 444 7506

E: tess.kotze@capetown.gov.za

Date: 23 August 2021

Fradreck Garatsa
Cape Peninsula University of Technology
Student Number 220410445

5 Malawi Road
Retreat
Cape Town

Dear Sir

ASSISTANCE WITH RESEARCH: MASTERS DEGREE IN TOWN & REGIONAL PLANNING

Your email enquiry of 20 August 2021 has reference.

I hereby confirm that my office would be willing to assist you with providing you with information towards your research regarding "Institutional and spatial economic factors that influence the location of manufacturing firms in the vicinity of Cape Town International Airport, South Africa".

As further discussed in our e-mail correspondence, we will start the interaction with a virtual meeting to get more clarity on how we can assist and what information you anticipate to obtain from us.

Our Department deals with Land Use Management that entails receiving and processing of land use applications in terms of the City of Cape Town Municipal Planning By-Law. We also provide input to all Spatial Planning initiatives undertaken for our area of jurisdiction that includes the Cape Town International Airport and surrounds.

We could potentially assist with *inter alia* the following:

- Zoning information
- GIS captured information
- Information on current projects in the area

- Spatial Planning documents such as the Tygerberg District Plan and City Metropolitan Spatial Development Framework.
- Interviews

I trust the above is in order.

Regards



Tess Kotze

SECTION HEAD: LAND USE MANAGEMENT – TYGERBERG DISTRICT
Directorate: Spatial Planning and Environment

WORKING FROM HOME DURING COVID-19

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