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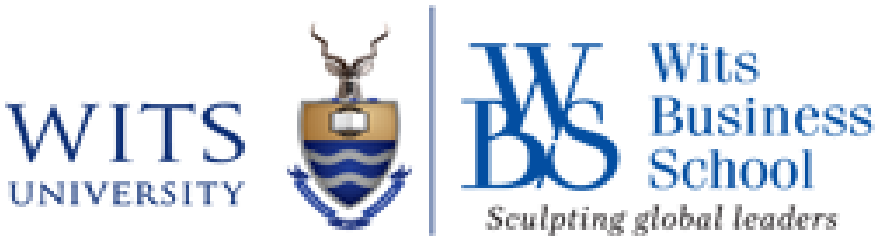
Performance of the Johannesburg Stock Exchange as a growth catalyst of small medium enterprises

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Performance of the Johannesburg Stock Exchange as a growth catalyst of Small Medium Enterprises

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A research report submitted in partial fulfilment of the requirements for the degree of Master of Management in Finance and Investment in the Faculty of Commerce, Law and Management at Wits Business School, University of Witwatersrand

November 2022

ABSTRACT

Small and medium-sized enterprises (SMEs) seek equity financing through stock exchanges to fund future growth opportunities, acquisitions, existing projects, and investment opportunities. The Johannesburg Stock Exchange (JSE) and Alternative exchange (AltX) provide a platform for SMEs to list and raise capital. In this paper, we investigate the impact that the AltX and JSE has on the growth, operating performance, and market performance of listed SMEs. The panel regression model is used to investigate this relationship. We used revenue growth as a proxy for growth, earnings per share (EPS) as a proxy for operating performance and share price as a proxy for market performance. Our independent variables were small businesses characteristics (age, size, leverage, dual listing, and industry) and stock market indicators (market liquidity, stock market capitalisation, volume, capital raised, and IPO ratio). GDP growth was included as a control variable. The panel data used in this study were collected from 2007 to 2020, and the estimation sample consists of 34 companies listed on AltX and 49 companies listed on the JSE mainboard.

The empirical findings show that leverage, market liquidity and the industrials industry have an impact on the revenue growth of listed SMEs. The results of the impact of listing on the operating performance of listed small businesses using EPS as a proxy show that company age, size, dual listing, capital raised, and industries such as industrials, technology, consumer services, and healthcare influence the EPS of small businesses listed on the JSE and AltX. Our findings on SMEs market performance indicate that company size, age, leverage, dual listing, IPO ratio and industries such as consumer services, financials, industrials, technology, and telecommunications all have a significant impact on the share price of listed SMEs. We also found that the JSE and AltX have a differential impact on listed small businesses.

DECLARATION

I declare that this research report is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in Finance and Investment at Wits Business School, University of Witwatersrand.

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Julia Maluleka Date

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CHAPTER 1: INTRODUCTION

1.1 Introduction

This chapter presents the research topic and the rationale for the study. Section 1.2 discusses the background of the study, followed by the research problem in section 1.3 and the research objectives in section 1.4. Section 1.5 presents the research hypothesis, followed by contributions to the body of knowledge in section 1.6, benefits of the study in section 1.7, and structure of the thesis in section 1.8. Lastly, we conclude the chapter with a chapter summary.

1.2 Background

South Africa, like many other economies, has seen a considerable growth in the number of small and medium-sized enterprises (SMEs). According to Kalidas et al. (2020) SMEs make up 98% of South African companies, contribute 39% to gross domestic product (GDP) and employ about 60% of the workforce. Globally, SMEs account for 90% of businesses and more than 50% of the workforce, and in emerging markets, SMEs account for 40% of total GDP (World Bank, 2020). It demonstrates that, as in other economies, SMEs are a key driver of economic growth in South Africa (Kalidas et al., 2020). Although SMEs are crucial for economic growth, their ability to expand is hampered by a lack of access to finance.

Herrington and Kew (2018) reveal that SMEs in South Africa found it difficult to access funding provided by government agencies and commercial banks. Barriers cited indicate that potential funding institutions are risk averse, have limited appetite to finance SMEs and require huge collateral. As a result, SMEs seek equity financing through Stock Exchanges to overcome funding constraints, increase their visibility and gain credibility (Harwood & Konidaris, 2015). The inability of SMEs to obtain required funding is also hampered by information asymmetry, which makes credit assessment difficult (Mills & McCarthy, 2016). The extent to which small businesses make their information available to the public enables investors to make better investment decisions and minimises adverse selection (Yartey & djasi, 2007). Furthermore, banks protect their profit margins by establishing investment mandates that prohibit them from investing in businesses that fall below a specific size and characteristics. SMEs frequently require loans with modest minimum investment requirements (Mills & McCarthy, 2016).

To facilitate further growth and raise capital SMEs can have their businesses list on the stock exchange. Listing creates market valuation of these companies, thereby creating opportunities to raise funds for future investment opportunities as well as realising their investments (Wright, 2019; Pastusiak et al., 2016). In addition, the exchange provides trading facilities for companies and investors alike. It acts as a vehicle of wealth distribution and mobilising savings and investments (Musonera & Safari, 2008).

In addition to capital raising, there are other various factors that influence firm's listing on the stock market. These factors can be internal and external, and include economic factors (Chemmanur & Fulghieri, 1999); the industry and the conditions in which the company operates (Pagano et al., 1998; Corwin & Harris, 2001); to unlever the balance sheet (Pastusiak et al., 2016), repayment of debt or refinance borrowings (Pagano et al., 1998), help the company establish general public awareness of the brand (Harwood & Konidaris, 2015) and dispersed ownership (Chemmanur & Fulghieri, 1999). While it all depends on the company itself and the current state of the company's wellness, but the decision itself is often viewed as a huge milestone towards of the company growth (Pastusiak et al., 2016).

Despite the advantages that come with being listed on a stock exchange, there are also drawbacks to being a public company. Listing on an exchange involves transparency and mandatory disclosure of all material information, which can be seen as a challenge to SMEs due to limited resources at their disposal. The costs of listing such as annual listing fees, mandated disclosure, and documentation fees, may outweigh the advantages (Pour & Lasfer, 2013; Nassr & Wehinger, 2016). Pour and Lasfer (2013) report in their study that newly listed companies have significant leverage at the start of their listing years, and their profitability declines. The inability of listed companies to raise equity capital and develop value from listing is also hindered by a lack of investor interest and lack of liquidity. According to Pour and Lasfer (2013), companies that are unable to raise the requisite capital during their public life are more likely to delist from an exchange.

The Johannesburg Stock Exchange (JSE) was established in 1886 in Johannesburg, South Africa. It provides an alternative means for SMEs and large companies to raise funds. The JSE caters for both SMEs and large companies. Companies can either list on the mainboard, the preferred platform for blue chip companies or the Alternative Exchange (AltX), a preferred platform for budding and pioneering companies. The AltX was established as a separate board in 2003 and its focus is to attract young, pioneering companies to apply for a listing, which would assist them to raise capital and expand their businesses, which they were not able to qualify for a listing on the JSE's mainboard. Over the years, the mainboard and AltX has attracted both local and foreign firms and these companies have been listed for either a shorter period or a longer period.

Stock exchanges also serve as regulatory environment, as such offer protection to investors. Companies should meet certain requirements to be eligible for continuous listing on the stock exchange (World Investment Report, 2017). These requirements apply to all listed companies and may differ from country to country. Table 1 below outlines the listing requirements for the JSE main and AltX boards. As shown in Table 1, the listing requirements for the junior market (AltX) are less stringent while also attempting to reinforce the integrity of directors through education programs such as the director's induction program.

Table 1: JSE initial entry criteria for secondary and primary listing

	Main Board	**AltX**
Share capital	R50million	R2million
Profit history	3 years	None
Pre-tax profit	R15 million	n/a
Shareholder spread	20%	10%
Sponsor / DA	Sponsor	Designated advisor
Publication in the press	Compulsory	Voluntary
Number of transaction categories	2 (threshold 30%)	2 (threshold 50%)
Annual listing fee *discounted by 50% for Inward Listings	Min R44 570 & Max R392 200 Charged according to market cap during the preceding year	34000 (including VAT)

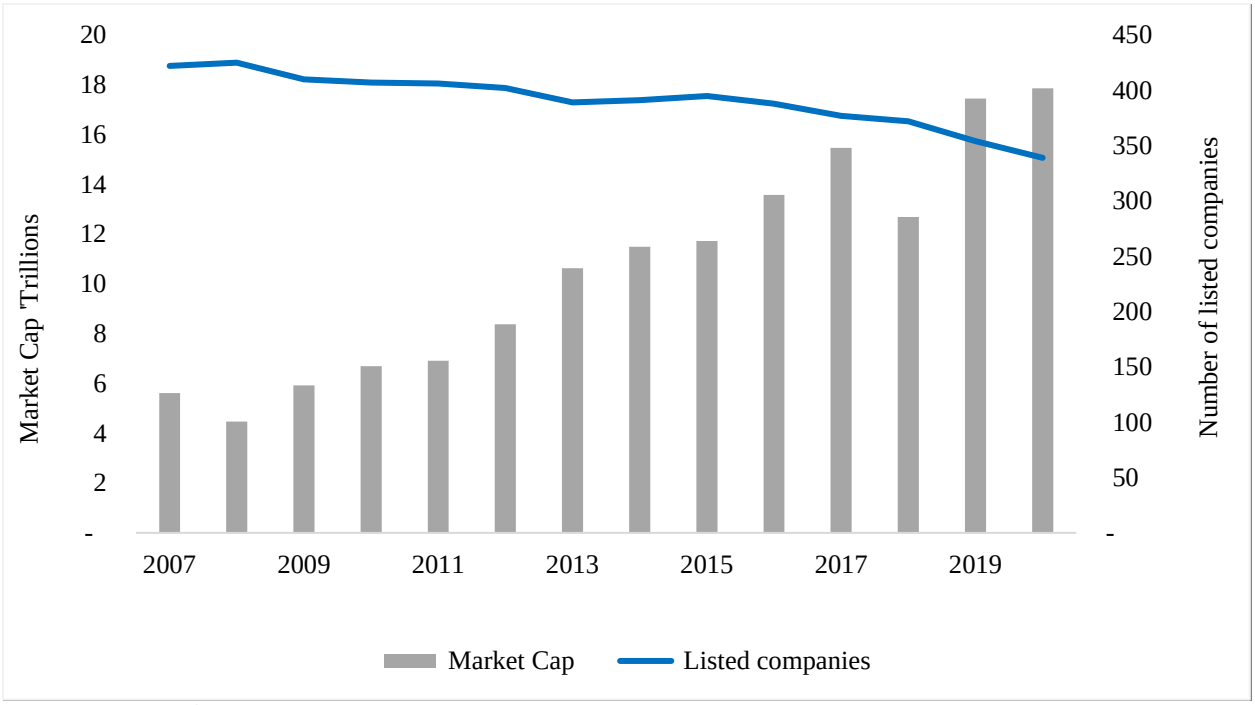
Education requirements	n/a	All directors to attend Directors Induction Programme

Source: JSE 2021

Post listing, companies are obliged to adhere to ongoing listing regulations and costs. These regulations serve as a preventative measure to ensure compliance, transparency, and information efficiency in the market. Transparency is achieved through public stock price quotes. Firms are also obliged to disclose their operational activities as well as financial information for investors to make informed decisions (Corwin & Harris, 2001). Transparency and disclosure requirements prevent companies from acting unethically, thereby manipulating the firm's valuation and increasing their return from listing (Bruton et al., 2010).

The JSE has grown over the years in terms of market cap as shown in figure 1 below. Between 2007 and 2020, the total market cap significantly increased while the number of listed companies continues to shrink. It is evident that companies on the stock exchange are increasing in size, measured by market capitalisation.

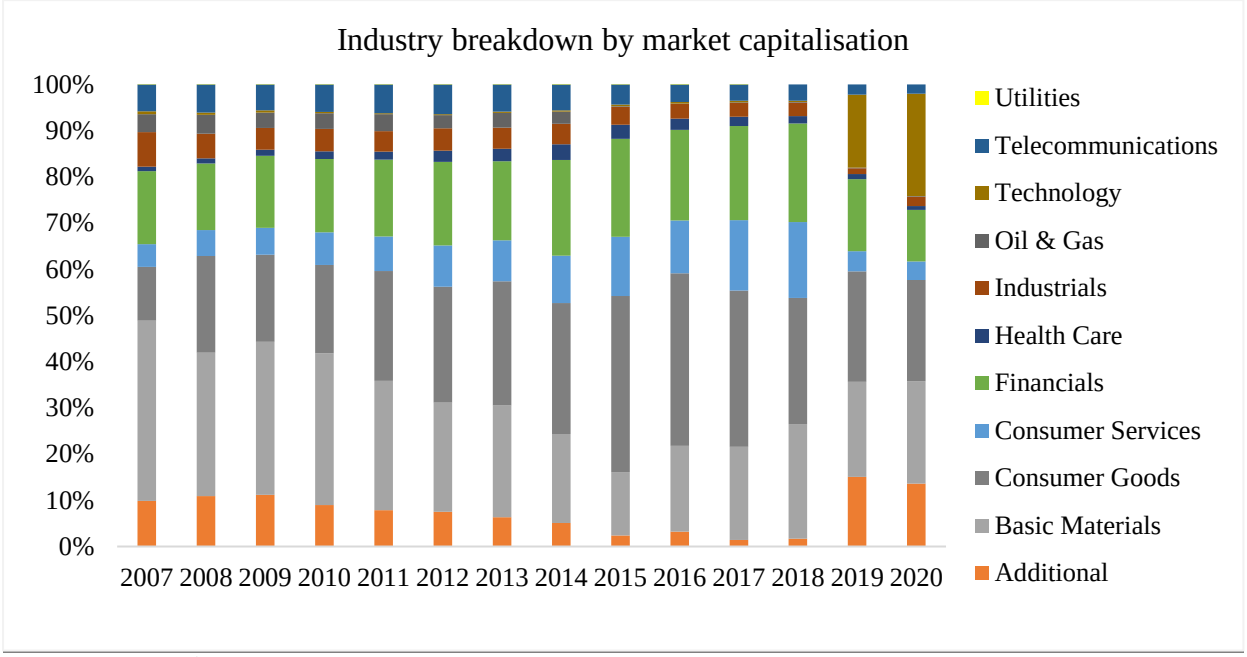
Figure 1: Listing and market capitalisation performance of JSE



Source: Data sourced from JSE

Companies listed on the JSE represent a diverse range of industries, including consumer goods, consumer services, basic materials, financials, industrials, healthcare, oil and gas and technology, as illustrated in figure 2 below. Between 2007 and 2020, companies in the consumer goods and basic materials were dominant, accounting for the bulk of the exchange market capitalisation.

Figure 2: JSE industry analysis by market cap from 2007 to 2020



Source: Data sourced from JSE

The JSE has the highest number of listed companies and overall market capitalisation on the African continent, making it the continent's largest stock exchange (Andrianaivo & Yartey, 2010). Globally, it is ranked among the top 20 stock exchanges (see Table 2).

Table 2: JSE ranking globally by market capitalisation

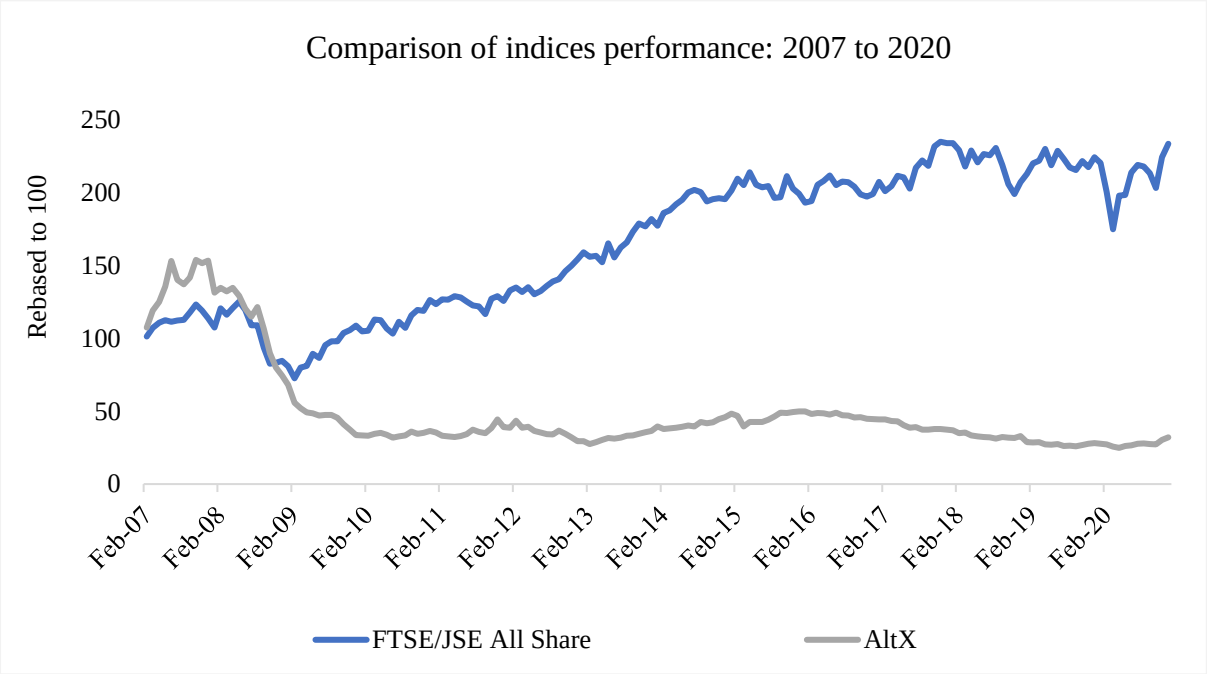
2007			2020		
Exchange Name	**Mkt Cap US$M**	**Rank**	**Exchange Name**	**Mkt Cap US$M**	**Rank**
NYSE	15 650 833	1	NYSE	22 509 489	1
Japan Exchange Group Tokyo	4 330 922	2	Nasdaq - US	19 060 372	2
Euronext	4 222 680	3	Shanghai Stock Exchange	6 975 970	3
Nasdaq - US	4 013 650	4	Japan Exchange Group	6 718 220	4
LSE Group London Stock Exchange	3 846 462	5	Hong Kong Exchanges and Clearing	6 130 420	5
Shanghai Stock Exchange	3 694 348	6	Euronext	5 443 948	6
Euronext Paris	2 740 341	7	Shenzhen Stock Exchange	5 238 495	7
Hong Kong Exchanges and Clearing	2 654 416	8	LSE Group	4 045 597	8
TMX Group	2 186 550	9	TMX Group	2 608 377	9
Deutsche Boerse AG	2 105 198	10	National Stock Exchange of India	2 552 464	10
BSE India Limited	1 819 101	11	Saudi Exchange (Tadawul)	2 429 102	11
BME Spanish Exchanges	1 799 834	12	Deutsche Boerse AG	2 284 109	12
National Stock Exchange of India	1 660 097	13	Korea Exchange	2 176 190	13
B3 - Brasil Bolsa Balcão	1 369 711	14	Nasdaq Nordic and Baltics	2 110 440	14
ASX Australian Securities Exchange	1 298 315	15	SIX Swiss Exchange	2 001 603	15
SIX Swiss Exchange	1 274 657	16	ASX Australian Securities Exchange	1 720 556	16
Nasdaq Nordic and Baltics	1 242 578	17	Taiwan Stock Exchange	1 598 570	17
Korea Exchange	1 122 606	18	Tehran Stock Exchange	1 218 392	18
Borsa Italiana	1 072 535	19	**Johannesburg Stock Exchange**	**1 051 529**	**19**
Euronext Amsterdam	956 329	20	B3 - Brasil Bolsa Balcão	988 374	20
Johannesburg Stock Exchange	**828 185**	**21**	BME Spanish Exchanges	759 175	21

Source: Data sourced from World Federation of Exchanges (WFE)

Figure 3 depicts the historical performance of the alternative exchange (AltX) index and the JSE All Share index from 2007 to 2020. The AltX index benchmarks the performance of AltX-listed firms, whereas the FTSE/JSE All Share (All-Share) index measures the performance of the JSE. We observe that the AltX index is heading downwards, while the All-Share index is trending upwards. This observation leads to the conclusion that small businesses on AltX are underperforming. The JSE has quickly recovered from the 2007/2008 financial crises while the alternative exchange (AltX) is yet to recover.

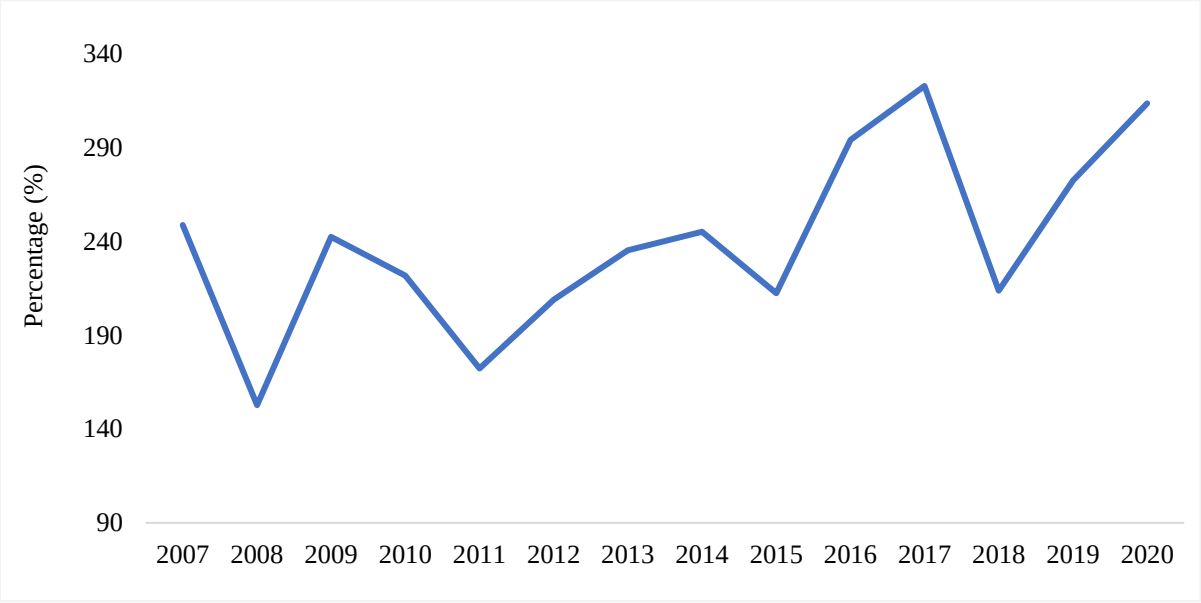
The JSE is a well-established stock market, with a market capitalisation of 313 percent of South African GDP by the end of 2020 as shown in figure 4 below.

Figure 3: The JSE and AltX performance



Source: Data sourced from JSE

Figure 4: JSE market cap as a % of GDP



Source: Data sourced from the World Bank

There are certain factors and characteristics that should be associated with the stock exchange for it to be recognized as a well-developed and functioning properly. These determinants, including those affecting the success of publicly traded companies, have been documented in the literature. These features are said to encourage companies to list on the exchange and influencing listed companies' performance and growth (Lo, 2013). Stock market liquidity, stock exchange size, easy access to equity capital from available investors, increased trading activities through improved market microstructure, dual listings, and market dynamics are the primary characteristics of a well-functioning and effective listing (Jeng & Well, 2000; Pagano et al., 2001; Lo, 2013; Yoo, 2007; Šestanović, 2016).

The overarching aim of this study is to determine which stock market factors have a significant impact on the performance and growth of publicly traded SMEs.

1.3 Research Problem

The Johannesburg Stock Exchange provide a platform for SMEs and large businesses to list and raise capital to pursue future growth and investment opportunity, and in return maximise shareholders value through capital appreciation and profit distribution. In the last decade, the JSE has gone through the boom and the decline phase. There has been a large number of delistings compared to new listings on the JSE. George (2020) posits that listed companies' are concerned about persistent decline in share price due to liquidity constraints and limited interest from institutional investors resulting in companies opting to delist. Small size companies are trading at a discount, and private equity firms are recommending opportunistic investors to buy them out (Rowe-Roberts, 2021). Many companies have recently withheld dividend payments due to concerns about the impact of Covid19 on future cashflows.

Although many factors contribute to this behaviour, it is worth noting that company success is largely determined by financial resources, which are made accessible for SMEs listed on the stock exchange. However, given the recent trend of delistings, it is questionable whether listing on the stock exchange is helpful to SMEs, and whether SMEs are reaping the full benefits of being listed. To be able to make an informed assessment of this trend, a thorough examination of the relationship between the JSE and AltX and the performance and growth of small businesses listed on these platforms is required.

1.4 Research Objectives

The aim of this study is to evaluate how the JSE and AltX impact the performance of SMEs listed on their platforms. This study therefore intends to:

- To investigate the correlation between the South African stock market and the growth and performance of listed SMEs.
- To investigate the economic significance of the JSE and AltX on small businesses listed on their platforms.
- To assess the differential impact of JSE and AltX on their listed companies.

1.5 Research Hypothesis

The primary aim of this study is to evaluate the impact that listing on the Johannesburg Stock Exchange and AltX on SMEs. Given the criteria for listing success, the following hypothesis will be tested.

Hypothesis one:

Ho: The JSE and AltX do not have a long-term relationship with the growth and performance of listed small businesses.

Ha: The JSE and AltX has a long-term relationship with the growth and performance of listed small businesses.

Hypothesis two:

Ho: The health of SA stock market does not have an impact on the health of listed small businesses.

Ha: The health of SA stock market has an impact on the health of listed small businesses.

Hypothesis three:

Ho: The JSE and AltX do not have differential impact on listed small businesses.

Ha: The JSE and AltX has a differential impact on listed small businesses.

1.6 Contribution to the body of knowledge

There has been limited research that investigate the relationship and the impact of stock markets on their listed SMEs. Aggarwal and Thomas (2017) investigated how listing impacted the growth prospects and constraints for SMEs listing in India and found that listing enhanced the assets size and capital structure of listed companies compared to unlisted SMEs, but there was no indication of improved company performance. Mentegari and Nawar (2016) examined the growth of firms on the FTSE AIM All-Share and FTSE Small Cap indices to see if there is a difference in performance between companies listed on AIM and main market of the London Stock Exchange. Their findings show that SMEs on AIM exhibited small but steady growth when compared to the main board, and they concluded that AIM is more advantageous for SMEs to use as an entry point into the capital market than listing directly on the main market.

The current study extends the existing literature by investigating the relationship between two different markets (JSE and AltX) in SA with the intention of establishing which of the two has a stronger relationship with their listed SMEs in terms of supporting their performance and growth.

1.7 Benefits of the study

The purpose of this research is to find out how public small firms' performance and growth is affected by their listing on the JSE and AltX. By analysing the relationship between two different markets (JSE and AltX) and the performance and growth of listed small businesses, the study presents fresh empirical evidence, which both public and private small businesses, investors, and stock exchanges can use as an input in their decision-making process. The study presents important insights for new and current investors to consider when considering small

businesses for investment. Furthermore, the study provides a progress report on how public small companies benefit from listing and which stock exchange indicators and company characteristics influence their performance. Finally, the study examines the effectiveness of the JSE's SME platform as well as the interventions put in place to help small enterprises grow.

1.8 Structure of the thesis

The final report will consist of five chapters. Chapter two systematically reviews the literature about small businesses and the stock markets. Chapter three discusses the research methodology employed to achieve the research objectives. Chapter four presents research findings while chapter five discusses the results and concludes the study.

1.9 Chapter summary

In this section of the study, we defined the research problem, objectives, and study significance. Due to SMEs' lack of access to financial resources, stock exchanges, including the Johannesburg Stock Exchange, have created platforms that are well suited for SMEs to list on, primarily to raise equity finance for future opportunities. Other non-financial reasons exist for small businesses to go public. The listing environment is intended to influence the development of small businesses while directly or indirectly protecting both small businesses and investors.

The next chapter reviews literature on small businesses and the listing environment with specific focus on determinants of small businesses' success, SMEs and economic growth, stock market and businesses development as well as stock market characteristics attracting companies to list, determinants for terminations from an exchange and performance of listed companies post listing.

CHPATER 2: LITERATURE REVIEW

2.1 Introduction

The previous chapter provided the context for the study. This chapter builds upon the motivation from chapter one, and reviews a literature related to small businesses' performance and stock market. The literature is divided into twelve sections. Section 2.2 provides a theoretical framework for the research; section 2.3 defines SMEs and section 2.4 reviews small businesses and information asymmetry followed by factors influencing the success of SMEs section 2.5. We then look at the literature pertaining the economy and small businesses, stock market characteristics and businesses and stock market and small business development in sections 2.6, 2.7 and 2.8, respectively. Then the following sections 2.9, 2.10 and 2.11 outlines the criteria for listing success and determinants for delisting, stock market efficiency and IPOs performance. Finally, the chapter summary concludes the chapter.

2.2 Theoretical framework for this research

This study is underpinned by two main theories which are resource-based theory and market-based theory. Both theories and how they are related to this research are discussed below.

2.2.1 Resource-based Theory

According to the resource-based theory, a company's success is determined by the resources it has and the quality of those resources (Galbreath, 2005). To remain competitive, a company's resources should be unique, rare, and valuable (Barney, 1991). These assets can be classified as tangible or intangible assets and include management skills and talents, marketing strategies, technology resources, products, and finance (Galbreath, 2005). The stock market allows companies to raise equity funds (financial resources) that they would not be able to access if they were not listed. In addition, listed businesses gain more visibility and are viewed as trustworthy as a result of the regulations that come with listing.

2.2.2 Market-based Theory

Market-based theory places a strong focus on industry variables and external market orientation as key determinants in a company's success (Wang, 2014). The theory urges that the company's growth and profitability are influenced by its operating environment (Makhija, 2003). Companies on the stock exchange are classified by industry. Factors specific to each industry are likely to have a substantial impact on the development and performance of listed companies. In addition, stock market conditions are important for financing innovation and growth (Wright, 2019).

2.3 Definition of SMEs

SMEs in South Africa (SA) is defined by the number of employees and annual turnover, as published in the Government Gazette on March 15, 2019. Employee numbers and annual turnover are cited in the literature as commonly used criteria in various countries to define SMEs (Harwood & Konidaris, 2015; Abor & Quartey, 2010). Table 3 summarises the South African definition of SMEs. A company is classified as SME in South Africa if it has 250 or fewer employees and an annual turnover of R220 million or less.

Table 3: Definition of SMEs in South Africa

Company classification	Number of employees	Total annual turnover in ZAR
Medium	51 to 250	35 million to 220 million depending on the sector
Small	11 to 50	15 million to 80 million, depending on the sector
Macro	0 to 10	5 million to 20 million, depending on the sector

Source: Government Gazette on March 15, 2019

The classification of SMEs is considered as a function of policy objectives, and a clear definition is needed to drive government actions effectively (EL Madani, 2018). For example, in 2014, the South African government formed a separate department for small enterprises with the goal of creating a supportive environment and regulations that encourage growth (DSBD, 2021).

In the listing environment, the size of the firm is determined by its market capitalisation and many stock exchanges, like the JSE have no definition of SMEs based on market capitalisation (Peterhoff et al., 2016). Although there is no definition for SMEs by market capitalisation, stock exchanges have SME exchanges or junior boards dedicated to SMEs (Harwood & Konidaris, 2015). The SME exchanges differs from the platforms for large companies in that they have fewer or less stringent listing requirements (Aggarwal & Thomas, 2017; Harwood & Konidaris, 2015). The JSE Alternative Exchange was established specifically to focus on SMEs. In this study, SMEs will be defined as small businesses listed on AltX and those listed on the main board with market capitalizations similar to AltX companies.

2.4 Small business and Information asymmetry

When compared to large organizations, small businesses face asymmetric information issues since their material information is not readily available and conveyed, or the information is insufficient or incomplete (OECD, 2015). As a result, creditors have found it difficult to assess small businesses' creditworthiness (Mills & McCarthy, 2016). This is because adverse selection can occur when decisions are made based on insufficient information.

The listing requirement for small businesses listing on the junior boards are less stringent than those on main board (Aggarwal & Thomas, 2017). In comparison to main board listed companies, publication in the press is voluntary for small businesses listed on AltX (see Table 1). As a result, reduced reporting requirements and limited information availability particularly in small cap companies and often results in persistent undervaluation of these companies. Small companies become undervalued and unappealing to potential investors. Valuing a company's performance is critical for shareholders and investors (Khodamipour et al., 2014). The availability of reliable data allows investors and credit providers to make more informed decisions, resulting in funds being adequately allocated to companies (Yartey & djasi, 2017). Investors are cautious of investing in companies that provide little information and lack transparency (OECD, 2015; Mills & McCarthy, 2016).

2.5 Factors influencing the success of small businesses

Researchers have investigated factors affecting the success of small businesses. Studies either concentrate on a single characteristic or attempt to capture the whole profile of successful SMEs (Chittithaworn et al., 2011; Kemayel, 2015). Philip (2011) investigated the factors that influence the success of SMEs in Bangladesh. Chittithaworn et al. (2011) conducted a study of the factors influencing the success of Thailand SMEs. Kemayel (2015) conducted an empirical study of the success factors of Lebanese SMEs. According to the findings of these studies, internal and external factors have a significant impact on the success of small businesses. Internal factors are controlled by the company and include SMEs characteristics such as management know how, business methods and management characteristics, resources and finance, customers and market, product and services and external factors are associated with the environment which SMEs operate. To develop, SMEs require favourable operating conditions, legislation as well as adequate infrastructural services (Lukács, 2005). Also, a conducive business environment has been identified as a determinant of SMEs' success as it promotes growth and causes them to thrive (Dubihlela & Van Schaikwyk, 2014).

Jasra at al. (2011) in their study of determinants of SMEs success of 520 firms across different sectors in Pakistan found that resources such as financial, marketing strategy, technology, government support and entrepreneurial skills have a significant positive impact on small businesses. An empirical study conducted by Félix and Santos (2018) found that business factors such as investment in innovation, productivity and venture capital funding influence the success of small businesses.

Al-Tit et al. (2019) investigated the factors that influence the success of SMEs in Saudi Arabia and concluded that business support, capital availability, management factors and individual factors influence the success of SMEs positively. Cicea et al. (2019) developed an economic model for the performance of SMEs. The model highlights nine variables that influences the success of SMEs and are classified into four environments: economic, social, political, and demographic. It shows that firm characteristics, resource availability, intervention from relevant stakeholders, and external environmental factors all play a significant role in SMEs' success.

2.6 The economy and small businesses

SMEs operate across different economic sectors of the country and are dynamic, innovative and growth oriented (Lukács, 2005). They are also volatile as they are too vulnerable to the country's economic condition. The recent COVID-19 pandemic, for example, has harmed the performance and success of numerous SMEs. Bartik et al. (2020) investigated the impact of COVID-19 on North American SMEs. They surveyed 5800 companies between 28 March and 4 April 2020. Their findings reveal that 43 percent of SMEs were forced to close temporarily, and 40 percent of jobs were lost. They also brought up the fact that many SMEs are financially vulnerable. This shows how economic conditions affect the survival and growth of small businesses. A thorough understanding of the underlying economic factors is critical for the firm (Chemmanur & Fulghieri, 1999).

Despite their vulnerability to economic conditions, small businesses make an important contribution to both emerging and developed economies. According to Madanchian et al. (2015), SMEs are major employers, are innovative, and foster economic growth.

2.6.1 Small businesses and employment

The SMEs sector accounts for the majority of new job creation in countries (Mukole, 2010). Abor and Quarterly (2010) discussed the characteristics of SMEs in terms of economic development and constraints in developing countries, focusing on Ghana and South Africa. They discovered that SMEs in these two countries perform similar roles in terms of contributing to development, production, employment, and income in their economies. SMEs employ up to 50% of the global labor force and generate 7/10 of new jobs in emerging markets (World Bank, 2020). SMEs employ approximately 60% of the workforce in South Africa (Kalidas et al., 2020).

2.6.2 Small businesses and innovation

SMEs contribute significantly to the economy through innovation by introducing new products and adapting existing products to meet customer needs (OECD, 2015). Their creative thinking enables them to create structures that benefit the economy. Madanchian et al. (2015) investigated SME's role in Malaysia's economic development and revealed that SMEs have been recognised as a supportive source of growth and developing the substructures needed to accelerate the country's economic growth and development.

2.6.3 Small businesses and economic growth

SMEs are able to grow various sectors of the economy and drive global economic growth through innovation and their ability to create jobs. The Gross Domestic Product (GDP) is used to measure the size of an economy (GDP), and SMEs contribute approximately 40% of GDP in emerging economies, while accounting for 39% in South Africa (Kalidas et al., 2020; World Bank, 2020).

2.7 Stock market and small business development

Stock exchanges have established junior boards to help small businesses access capital through public markets. To a greater extent the exchanges have been successful in attracting small businesses and investors. Small businesses primarily join these platforms to raise capital although they may also list for other non-financial benefits (Irving et al., 2017).

According to the study published by UNCTAD and the World Federation of Exchanges (WFE) in 2017 on "the role of stock exchanges in fostering economic growth and sustainable development", stock exchanges in particularly SME platforms, creates an environment that not only promotes access to capital, but also supports the growth of these companies. The stock exchange provides support services aimed at promoting business growth, effectiveness, and profitability. It also provides resources and the necessary skills (Lo, 2013). Other services aimed at promoting SMEs include profiling to promote institutional investment and raise awareness of listed companies (Yoo, 2007).

In the case of the Johannesburg Stock Exchange, tailored value-added services and interventions such as networking opportunities for companies, targeted seminars that bring companies, investors, and analysts together, venue and conference facilities for annual results presentations and virtual meetings, training, and access to advisory services through registered and reputable designated advisors or sponsors are readily available to SMEs (JSE, 2021). These interventions are intended to provide listed SMEs with both tangible and intangible benefits, as well as to assist them in achieving the listing objectives discussed in the introductory chapter.

According to Lukács (2005), in order to succeed, SMEs require access to advisory services as well as knowledge about market opportunities.

Irving et al. (2017) conducted evidence-based research through survey to determine amongst other things whether SMEs' post listing experience met their expectations. They surveyed 31 SMEs listed on the SME platform and 21 on the main board in India, Jamaica and South Africa and they expanded the study to include unlisted firms. Their findings suggests that 62 percent of surveyed SMEs listed on the main board and 52 percent on the SMEs platform of India's Bombay Stock Exchange are satisfied with their listings experience and have gained extra benefits such as improved business operations and exposure. In South Africa, 60 percent of surveyed SMEs on the main board and 57 percent on AltX are pleased with their listing decision, citing the ability to grow their business and improved access to capital as benefits. In Jamaica, 87 percent of the surveyed SMEs benefited from their listing, achieving improved financial performance, better business practices, and improved performance, among other benefits.

Sebastian and Merino (2019) investigated AltX's success in enabling small businesses to raise equity capital, with a focus on capital structure. Their empirical findings indicate that AltX firms have higher levels of debt than main board firms, and they have concluded that the AltX may be partially addressing the financial challenges faced by SMEs.

A study conducted by Aggarwal and Thomas (2017) on the impact of listing on the SMEs growth prospects by looking at SMEs listed on Bombay Stock Exchange in India compared to unlisted counters and companies listed on the main board. Their study concluded that listing has improved the asset size and capital structure of listed firms relative to unlisted SMEs but no evidence of improved company's performance.

Irving et al. (2017), and Sebastian and Merino (2019), and Aggarwal and Thomas (2017) provided evidence that some of the listed small businesses benefited from their listing while others have yet to reap the benefits.

2.8 Stock market characteristics and businesses

2.8.1 Market liquidity

Market liquidity is perceived as a key function of the stock market (Pagano et al., 2001). Initial public offering (IPO) is more likely to be successful in conditions where there is investor appetite and liquidity in the market (Jeng & Wells, 2000). Market liquidity is important as it is linked with low trading cost, allows for favourable shareholder returns, and attracts issuers and investors to the market (Peterhoff et al., 2016). Pagano et al. (2001) identified liquidity as one of the factors that lead to companies being cross listed on the stock exchange. The bid-ask spread, and shares turnover ratio are examples of techniques to gauge liquidity for the market or a stock.

2.8.2 Capital raised

SMEs require among other things, access to short term and long-term funding at low cost to succeed (Lukács, 2005). Stock exchanges afford companies to have access to a pool of local and internal investors (Šestanović, 2016). We live in a globalized economy with interconnected financial markets. Investors invest in businesses and countries where economic conditions are favourable, and capital flows freely across borders. The history of a globalized economy may be traced all the way back to ancient times. Globalisation, according to Flynn and Giráldez

(2008), began in the sixteenth century, although Moshirian (2007), Bell (2003), and O'rourke and Williamson (2002) believe it began in the nineteenth century. The availability of local and global investors in the market enhances firms' ability to access equity capital in the long term at a reasonable cost to finance their future investments and strategies.

2.8.3 Size of the stock exchange

The size of the stock exchange attracts more listings as companies believe that access to investors will improve (Pagano et al., 2001; Lo, 2013). According to Jeng and Wells (2000), an initial public offering (IPO) is more likely to succeed when there is availability of investors in the market. Furthermore, listing on a larger market increases the likelihood of the company increasing its visibility and reputation (Lo, 2013). Market capitalisation and the number of listed companies are two metrics used to measure the size of the stock exchange.

2.8.4 Increased trading activities

Companies and investors are attracted to a stock market where there is liquidity (Pagano et al., 2001). Increased liquidity indicates increased trading activities, as measured by volume traded, value traded, and number of transactions. The improved market microstructure also affects exchange trading activities. According to Madhavan (2000), "market microstructure is the mechanism through which investors' latent wants are eventually converted into prices and volumes". It includes the price discovery process, transaction costs, market transparency, market structure and design, and other market aspects. Amihud et al. (1997) studied the impact of improved market microstructure on stocks listed at Tel Aviv stock exchange. The authors stated that efficient trading methods on the Tev Aviv exchange had a positive impact on stock prices and increased the volume and liquidity ratio.

2.8.5 Dual listing

Dual listing occurs when a company lists on more than one stock exchange. Liquidity, market size, and legal regime are some of the variables that influence a company's decision to dual list (Lo, 2013, Pagano et al., 2001). Companies are attracted to stock exchanges that offer growth opportunities (Pagano et al., 2001).

2.8.6 Stock market dynamics

A successful market can also be characterised by a high entry rate and low exit rate (Yoo, 2007). An increase in the number of new listings suggests that the stock market is appealing to companies seeking to raise equity capital, whereas a high exit rate suggests that companies are not benefiting from their listing (Lo, 2013). Yoo (2007) and Šestanović (2016) identified listing ratio (new listings divided by total listings) and the delistings ratio (total delistings divided by total listings) as proxies to quantify entry and exit rates.

2.9 Criteria for listing success

De Wet and Hall (2006) identified value creation and cash flow as two key indicators for business success. Investors evaluate value creation in the context of the market performance of listed companies. Dividend payments and share price appreciation benefit investors (De Wet & Hall, 2006). Zhou and Lao (2012) also state that rising stock price is a criterion used to determine if an initial public offering (IPO) value has been created. Successful listing of a company provides investors and shareholders with an opportunity to share in the company's future growth (Wright, 2019). In addition, the stock exchange provides companies with long-

term, repetitive access to capital (Nassr & Wehinger, 2016). Companies use capital to fund growth opportunities that should be reflected in future business growth.

2.10 Determinants for delistings

Stock exchanges have been in operation for decades; however, the number of new listings on stock exchanges has recently been declining, and companies that are already listed are terminating at a faster rate (Wright, 2019). This behaviour can be attributed to a variety of factors, including public-to-private transactions fueled by management buyouts and private equity buyouts, as well as ongoing listing costs borne by companies (Wright, 2019).

Delisting from the exchange can be voluntary or involuntary. The involuntary process is initiated by an exchange. According to Yiannoulis (2019), involuntary delisting occurs because of the firm violating the stock exchange listing requirements such as the firm declared insolvency, failed to publish financial results, negative stock exchange returns, and auditors' opinion or company experiencing financial stress.

Voluntary delistings are initiated by the company and influenced by various factors. Benny and Hutagaol (2013) investigated the determinants of delistings using the Indonesia Stock Exchange. Their study indicates that share liquidity is a major delisting determinant factor and other factors are a decline in market capitalisation and growth opportunities. Information asymmetry particularly in small cap companies often results in persistent undervaluation of companies and makes them perfect candidates for delisting.

The annual listing cost is seen as a burden especially to SMEs and increases the probability of delisting (Nassr & Wehinger, 2016). Lack of investor interest in the listed company may result in the company opting to delist from the exchange (Pour & Lasfer, 2013).

2.11 Stock Market Efficiency and IPOs performance

Regardless of the rationale of taking the company publicly, the move will have a significant impact on the listed company's operation, performance, and growth (Pastusiak et al., 2016). Research has been carried to assess the effectiveness of the stock exchange in fulfilling its fundamental purpose, as well as to examine the post-listing performance of IPOs by investigating their stock prices, growth, and profitability, and the factors influencing the performance.

Pastusiak et al. (2016) investigated the level of profitability of companies listed on the Warsaw stock exchange a year before and after their initial public offering to determine whether public offerings improve companies' performance. Their study found that prior to listing, companies were more profitable than post listing. Kim et al. (2002) studied the post IPO operating performance of Thailand firms three years post the IPO and concluded that profitability after IPO declined.

Auret and Britten (2008) investigated the long-term operating performance of 391 JSE IPOs listed between 1990 and 2003. The study's findings show that the company's profitability, as measured by sales growth, is declining over time. Furthermore, long-term investment expenditure is found to be declining while tax payments are increasing. The authors also stated that companies listed on the JSE appear to perform poorly after listing, implying that they do not benefit from increased visibility.

Goergen et al. (2007) investigated the UK IPOs long-term performance and found that the size of the company affects IPO performance positively. They also pointed out that the company's performance declines over time. The long-term performance of small businesses is significantly lower than that of large businesses. Loughran and Ritter (1997) provided evidence that a companies' performance and profitability improved before seasoned offerings and then declined afterward. Small businesses performance is found to decline substantially.

Sohail and Rehaman (2010) examined the short-run performance in different states of the economy using data from Karachi stock exchange. It was concluded that in a short run basis the IPO outperforms and rewards investors with abnormal returns. In their analysis of JSE IPO aftermarket price performance, M'kombe and Ward (2002) found that IPOs are underperforming post listing and it worsens over time. Ritter (1991) investigated the long-term performance of 1526 NYSE and NASDAQ listed companies between 1975 and 1984 and found that younger companies had the worst long-term performance.

There is strong evidence that growth is not guaranteed for SMEs that are funding growth and trying to realize their potential through listing on the stock exchange. Companies can raise funds through the stock exchange, but there is no guarantee that all proceeds are fully utilised to fund their investment opportunities. This could be due to companies listing for reasons other than funding their investment opportunities (Auret & Britten, 2008).

The decline in a company's performance over time can be attributed to various factors. Margaretha and Supartika (2016) investigated the factors that influence SME profitability on the Indonesia Stock Exchange. Their findings show that, among other factors, industry affiliation has a positive impact on profitability while size and growth have a negative impact. According to a study by Omondi and Muturi (2013) on factors impacting the financial performance of companies listed on Nairobi stock exchange, company size, age, and liquidity improves their financial performance while leverage has a negative impact.

Ahinful et al. (2021) in their study on factors impacting the financial performance of Ghanaian SMEs revealed that firm age, size, and services sector (industry) affect their performance positively. A study conducted by Ahmad et al. (2015) established that leverage is negatively related to the company's financial performance.

Liu and Pang (2006) investigated factors influencing the survival and growth of Chinese listed SMEs, and their findings suggest that firm age has a negative impact on SMEs' growth while firm size has a positive impact. They also emphasised the importance of the firm's location and seasoned equity offerings for SME survival and growth. The study concluded that public listing does not help in the survival and growth of SMEs. Company specific factors play a role in influencing the long-term performance of listed SMEs. Poor post-IPO performance may also be influenced by investors' lack of interest in company shares.

2.12 Chapter Summary

This section of the study reviewed literature related to SMEs and the stock market. We began by discussing the definition of SMEs from the country's legislation perspective and the stock market perspective. Most of the stock exchanges including the JSE have a dedicated platforms established to list small and medium enterprises characterised by "relaxed" listing requirements. SMEs continue to seek equity finance through stock exchange listings to overcome the challenge of lack of access to capital.

Stock markets differ in their characteristics, and companies tend to list where they believe there is a better chance of growth. Market liquidity, capital raised, market size, market dynamics, increased trading activities, and dual listing are noted as stock market characteristics that influence companies to list. Share price performance is regarded as one of the criteria for determining listing success.

Several factors have been identified as drivers of SME development and performance. Financial resources, management characteristics, and technological resources are examples of internal factors, while industry-specific factors are examples of external factors. Companies' specific factors such as company size, age, and leverage also have an impact on the performance listed small businesses. The view put forth for factors influencing the growth and performance of small businesses is supported by two theories, namely market-based theory, and resource-based theory.

The following chapter discusses the study's research methodology.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research design and methodology of the study. Section 3.2. presents the data and data sources for this research. Section 3.3 outlines the research design followed by the description of variables in section 3.4. The chapter summary concludes the paper.

3.2 Data and data sources

The research sample for this study consists of small businesses that had the initial public offering (IPOs) on the JSE and AltX between 2007 and 2017 and are actively trading currently. The 2017 cut off would allow us to have at least 3 years data post IPO. The analysis is based on data of these small businesses from 2007 to 2020. All companies listed on the AltX were included in the research sample based on the fact that AltX was formed as a junior board to help smaller companies raise capital and act as their catalyst for growth and ultimately leading to their listing on the main board. Companies that are listed on the JSE, with the market cap of 3.5 million or below on their first trading day were deemed SMEs and therefore included in the sample as well.

Companies that were delisted during the sample period were excluded from the analysis because their financial data was not available. Preference shares that had been included in the new listings and companies where most of the data points were missing or could not confirmed were also excluded. Companies that delisted post the analysis period are included. Companies that first listed on the AltX board but later migrated to the mainboard of the JSE are included regardless of the size.

Table 3 below present the overall population, which includes all new JSE listings as well as sampling companies organised by listing year. Between 2007 and 2017, there were 234 IPOs on the AltX and main board of the JSE. Of the total newly listed companies, 87 were listed on the AltX and 89 were identified as AltX equivalent companies or companies of similar size to AltX listed on the JSE. The total sample from both exchanges added up to 176. However, because some of the companies delisted and some did not have sufficient data, the final sample consisted of 34 companies from AltX and 49 from the JSE making up a final sample of 83 SMEs. Table 3 also shows that the highest number of new listings on the AltX and the main board for the analysis period occurred in 2007, and then the number of new listings on a yearly basis fluctuated between 10 to 24, thereafter.

Table 4: Number of new listings and sample companies

	New Listings			Sample companies	
Year	**Total JSE (AltX + Main board)**	**AltX**	**Main board with similar size as AltX**	**AltX**	**Main board with similar size as AltX**
2007	61	37	17	11	5
2008	20	4	10	2	4

2009	10	4	4	1	3
2010	14	1	8	0	1
2011	16	3	12	2	8
2012	14	4	7	0	2
2013	13	5	4	1	4
2014	24	6	10	4	6
2015	23	8	7	5	6
2016	18	7	2	4	2
2017	21	8	8	4	8
Total	234	87	89	34	49

Source: JSE and Author's calculations

The stock market data for this study was obtained from the Johannesburg Stock Exchange, while the financial data came from Bloomberg and some from the financial reports of the respective companies.

3.3 Research design

To investigate the relationship between the stock market and listed SMEs, the panel regression model is utilised with growth, operating performance, and market performance as dependent variables of the listed companies. Earnings per share (EPS) and share price are used as a proxies for market and operating performance, while revenue growth is used as a proxy for SMEs growth. Stock market characteristics and firm characteristics are employed as independent variables. The stock exchange characteristics include the market liquidity, stock exchange size (market capitalisation), capital raised, volume traded and market dynamics (IPO ratio). These measures are widely recognised indicators that determine the success of a company's stock exchange listing, as well as those that contribute to a well-functioning stock market (Šestanović, 2016; Yoo, 2007). The firm size, age, risk (leverage), listing type (dual listing), and industry of a small firm are business characteristics factors considered. The control variable includes macroeconomic indicators such as GDP growth.

Regression equation estimators for analysis such as the pooled OLS, cross-sectional random effects model, and fixed effects model were computed. Breusch and Pagan Lagrange multiplier tests were used as well in choosing between the Random effect model and pooled OLS. The Hausman test is used for assessing whether a fixed effects model or a random effects model should be employed (Sebastian & Merino, 2019).

To investigate impact that the JSE and AltX has on the growth of listed small business, we use the following model:

$$Growth_{it} = \alpha_t + \beta_1 AGE_{it} + \beta_2 InFIRMSIZE_{it} + \beta_3 LEV_{it} + \beta_4 DUALLISTED_{it} + \beta_5 INDUSTRY_{it} + \beta_6 LQD_{it} + \beta_7 InVOLUME_{it} + \beta_8 InMKTCAP_{it} + \beta_9 InCapRaised_{it} + \beta_{10} IPORatio_{it} + \beta_{11} GDP_t + \varepsilon_{it} \quad \textbf{(1)}$$

Where: $Growth_{it}$ stated as revenue growth; *t* represents period with *t*= 1….13; α=constant; $\beta_1 \ldots\ldots \beta_{13}$= slope; *on the* represents number of small businesses observation where *i*= 34 for

AltX and 49 for JSE; $\varepsilon = errot\ term$; Independent variables and their measurements are explained in the subsequent section.

To investigate the impact that the JSE and AltX has on operating and market performance small business, we use the following equation:

$$Operating\ Performance_{\ it} = \alpha_t + \beta_1 AGE_{it} + \beta_2 InFIRMSIZE_{it} + \beta_3 LEV_{it} + \beta_4 DUALLISTED_{it} + \beta_5 INDUSTRY_{it} + \beta_6 LQD_{it} + \beta_7 InVOLUME_{it} + \beta_8 InMKTCAP_{it} + \beta_9 InCapRaised_{it} + \beta_{10} IPORatio_{it} + \beta_{11} GDP_{it} + \varepsilon_{it} \quad \textbf{(2)}$$

Where: $Operating\ Performance_{\ it}$ stated as EPS; *t* represents period with *t*= 1….13; α=constant; $\beta_1 \ldots\ldots \beta_{13}$= slope; *on the* represents number of small businesses observation where *i*= 34 for AltX and 49 for JSE; $\varepsilon = errot\ term$; Independent variables and their measurements are explained in the subsequent section.

$$Market\ perfomance_{it} = \alpha_t + \beta_1 AGE_{it} + \beta_2 InFIRMSIZE_{it} + \beta_3 LEV_{it} + \beta_4 DUALLISTED_{it} + \beta_5 INDUSTRY_{it} + \beta_6 LQD_{it} + \beta_7 InVOLUME_{it} + \beta_8 InMKTCAP_{it} + \beta_9 InCapRaised_{it} + \beta_{10} IPORatio_{it} + \beta_{11} GDP_t + \varepsilon_{it} \quad \textbf{(3)}$$

Where: $Market\ Performance_{\ it}$ indicate share price at the end of period *t* ; *t* represents period with *t*= 1….13; α=constant; $\beta_1 \ldots\ldots \beta_{13}$= slope; *on the* represents number of small businesses observation where *i*= 34 for AltX and 49 for JSE; $\varepsilon = errot\ term$; Independent variables and their measurements are explained in the subsequent section.

The panel data models are estimated twice, first for SMEs listed on AltX and then for SMEs listed on the JSE.

3.4 Description of variables

Table 5 below represent key variables employed in the study along with their units of measurement.

Table 5: Variables and descriptions

Variable	Symbol in the model	Description
Dependent Variables		
EPS	Operating performance	Earnings per share (EPS) is defined as a ratio of a company's net income to average outstanding shares for a given period. EPS is used as a proxy for small businesses' operating performance.
Share price	Market performance	Company's share price at the end of period t. The variable is used as a proxy for market performance. The variable is included because share price appreciation is a criterion used to assess IPO success and the capital growth invested in listed companies.
Revenue growth	Growth	Revenue growth measures the growth of the company. We use SMEs revenue growth at the end of each fiscal year. Revenue growth is calculated as follows: $Company\ revenue\ growth = \frac{Revenue_t - Revenue_{t-1}}{Revenue_{t-1}}$

		According to Liu and Pang (2006), when a company lists on the stock exchange, it demonstrates its ability to attract financial resources, which may suggest its potential for growth. Additionally, publicly traded companies are seen as more trustworthy to do business with due to the exchange regulations they are subject to and also have access to equity capital whenever it is needed, making them more likely to grow in terms of revenue over time.
Dependent Variables		
Company age	AGE	The age of the company is increasingly being investigated as one of the factors influencing company performance. Various metrics are used to determine the age of the company. According to Shumway (2001), the number of years since listing is the most economically significant measure of its age, and companies are homogeneous when they are first listed since they must meet similar listing requirements. In this study we use the company listing years to determine the age of the company.
Company size	FIRMSIZE	Company size is a variable of interest. Company's market capitalisation is used as a proxy for company size. Market capitalisation is considered because it measures the size of a company in the listing space, and it matters to investors and also affects the way the market views the company. Market capitalisation involves firms' growth opportunities and market conditions among others (Dang et al., 2018). Market capitalisation for individual stocks is calculated as share in issue multiply by share price at a particular period. In the model, natural logarithm of company's market capitalisation at the end of the year is used.
Risk (Debt)	LEV	To measure the risk of the small business, we use leverage ratio, and it is calculated using the following methodology: $$LEV = \frac{Total\ Asset}{Total\ Liabilities}\%$$ Company debt reflects the riskiness of the firm. Ahmad et al. (2015) established that leverage has a negative impact on the financial performance of the company. Companies with high leverage are at risk of solvency, winding up, bankruptcy (Almajali et al., 2012).
DualListed	DUALLISTED	Dual listed refers to a company that is listed on more than one exchange. The underlying assumption that underpins the inclusion of this variable is that listing on more than one exchange increases the likelihood of growth because the company is accessible to investors via the local exchange and the secondary exchange (Pagano et al., 2001). This is a dummy variable and 1 denote dual listed SMEs and 0 otherwise.
Industry	INDUSTRY	The industry in which the company is classified according to the JSE/FTSE industry classification in 2020. This variable is included to capture for the environment effect. Industry categories in the study are as follows: (1) Industry1 =Basic Materials, (2) Industry2 =Consumer goods, (3) Industry3 = Consumer services, (4) Industry4 = Financials, (5) Industry5 = Health Care, (6) Industry6 =Industrials, (7) Industry7 =Technology, (8) Industry8 = Telecommunications. This does not represent all JSE/FTSE industries, but rather the industry classification of the sampled companies.

Market liquidity	LQD	The annual liquidity for the JSE and AltX. The liquidity calculation used in this study is as follows: $$Marktet\ Liquidity = \frac{Total\ value\ traded\ at\ perid\ t}{Total\ market\ capitalisation\ at\ the\ end\ of\ period\ t} * 100$$ (annualised) The key assumption that underpins the use of market liquidity variable is that it is one of the most important drivers of IPO success in the stock market (Jeng & Wells, 2000).
Stock market size	MKTCAP	Market capitalisation is used to measure the size of the stock market. Market capitalization is considered because it is used to gauge the development of the stock market (Andrianaivo & Yartey, 2010; Levine & Zervos, 1998). Companies are drawn to list where the market has already developed. According to Levine and Zervos (1998), developed markets is also linked to risk diversification and the ability to mobilize funds. Furthermore, a developed stock market is more appealing to investors and listing on a major exchange has the potential to improve a company's reputation (Lo, 2013). In the model, the natural logarithm of the stock exchange capitalisation at the end of each year for the JSE and AltX is used. The variable values vary by period but remain constant across all companies.
Volume traded	VOLUME	The annual volume traded on the JSE and AltX. This variable is considered as it measures the depth of the market. In the model, the natural logarithm of total volume traded is used. The variable values differ for each period but constant for all companies.
Capital raised	CAPRAISED	Capital raised by companies listed on the JSE and AltX. This variable is considered as it measures the extent to which listed companies are able to raise equity capital. The primary reasons for a company to list on the stock exchange is to gain access to investors and thus raise equity capital to fund their growth (Šestanović, 2016). The ability of a company to raise capital when needed can aid in its growth. A study by Kemayel (2015) found that among other things the success of the company depends on the availability of financial resources. In the model, the natural logarithm of the yearly secondary capital raised on the JSE and AltX is used.
Market dynamics	IPORatio	To measure market dynamics, we use the IPO ratio. It gauges the health of the stock market. IPO ratio in this model is calculated as follow: $$IPORatio = \frac{Number\ of\ new\ listings_t}{Number\ of\ companies\ listed_t} *100$$ A healthy flow of new listings in the primary market is necessary for a robust secondary market (Wright, 2019).
Gross Domestic Product Growth	GDP	GDP is the control variable in the model. We use year on year GDP per capita growth rate. The support to include this variable is that performance of the economy is linked to the development of the companies.

3.5 Chapter Summary

This chapter presented and explained the research design, data and data sources, and variables for the study. Panel data models such as the pooled OLS, fixed effects model, and random

effects model were estimated. The Hausman test and the Breusch and Pagan Lagrange multiplier were used to select the appropriate model to investigate the relationship between the two listing venues (JSE and AltX) and listed small businesses. The findings of the research will be presented in the following chapter.

CHAPTER 4: RESEARCH FINDINGS

4.1 Introduction

In this chapter, we present the findings of the study. The results are based on the research design specified in chapter 3. The chapter is organised as follows: section 4.2 presents the descriptive statistics, followed by the relationship between variables analysis in section 4.3, normality test in section 4.4 and then model results in section 4.5. Chapter summary concludes the chapter.

4.2 Descriptive statistics

The descriptive statistics for all variables in the panel model are presented in this section. Subsection 4.2.1 presents the characteristics of AltX and JSE listed firms, and subsection 4.2.2 presents the yearly mean description of the data

4.2.1 Characteristics of AltX and JSE listed firms

The dependent and independent variables' mean, median, standard deviation, highest and lowest value are shown in Table 6 below. These statistical measures are derived from the values of the variables before transformation.

Table 6: Characteristics of AltX and JSE SMEs

Variable	Mean	Median	Std deviation	Highest	Lowest
Panel 1: AltX					
Revenue Growth	43.41	8.36	218.32	2921.14	-159.44
EPS	26.14	7.94	71.81	416.24	-541.52
Share Price (cents)	573.84	196.00	850.25	5779.00	0.00
LEV	44.45	43.28	23.11	142.96	0.047
AGE	9.96	12.00	3.55	13.00	3.00
Firm Size (Millions)	1768.63	448.59	3608.63	20623.39	0.00
VOLUME (Millions)	2605.74	2282.35	1237.31	4388.60	742.22
MKTCAP (Millions)	22172.29	20528.86	7737.75	39918.38	10189.88
CapRaised (Millions)	5500.21	2648.92	4584.10	17369.58	1038.82
Liquidity	10.75	9.27	5.12	29.38	4.05
IPO ratio	9.96	5.55	7.78	52.11	0.00
GDP growth	5.89	6.76	3.51	12.31	-2.04
Panel 2: JSE					
Revenue Growth	42.03	11.31	284.38	5057.88	-482.14
EPS	54.99	39.45	134.97	681.42	-986.40
Share Price (cents)	849.44	630.00	820.91	4749.00	0.00
LEV	40.86	36.58	29.82	295.72	0.31
AGE	8.925	9.000	3.251	13.00	3.00
Firm Size (Millions)	2713.25	1634.11	3333.91	22950.12	0.000
VOLUME (Millions)	83548.15	82472.04	16199.46	117776.2	61733.84
MKTCAP (Millions)	13220482	12682019	3700764	17854039	4541938
CapRaised (Millions)	96969.79	87522.70	56382.34	250190.2	35846.66
Liquidity	40.57	37.20	7.54	82.87124	34.90
IPO ratio	3.88	3.44	2.08	14.69	1.48
GDP growth	5.45	6.43	3.43	12.31	-2.04

The descriptive statistics results in Table 6 above show that the mean revenue growth rate for SMEs on AltX and JSE varies slightly, hovering around 40 percent. The highest revenue

growth for AltX firms is 2921 percent, with a minimum of -159 percent, whereas the highest revenue growth for JSE companies is 5057 percent, with a minimum of -482 percent. SMEs listed on the JSE trade at a higher price than SMEs on the AltX. The average AltX share price is 573.84 cents, while the JSE share price is 849.44 cents. The AltX and JSE firms' minimum share price is zero, indicating that some firms listed but did not trade immediately. The highest EPS for AltX companies is 416.24, whereas the highest EPS for JSE small businesses is 681.420. This indicates that JSE listed SMEs enjoy better earnings than AltX SMEs.

The mean leverage for small businesses for AltX sample is 44.45 and 40.86 for JSE sample, indicating that AltX listed small businesses took on more debt than JSE small businesses. Measured by market capitalisation, we find that small businesses on AltX are on average smaller than small businesses on the JSE. The average size of small businesses on the AltX and JSE is 1768.63 and 2713.25, respectively. This is not surprising given that AltX was founded to help young businesses grow. The mean age for AltX is 9.9 and 8.9 for the JSE. This indicates that on average the sampled AltX companies have been listed for a longer period than the sampled JSE SMEs.

In terms of stock market characteristics and performance measures, as anticipated the analysis shows a considerable difference between the two groups. The parameters of the alternative exchange are significantly different from those of the main market (Šestanović, 2016). We observe that the AltX has the lowest IPO ratio of zero, implying that there have been years when the AltX has had no new listings. The descriptive statistics analysis did not include dummy variables.

4.2.2 Yearly mean description of the data

Table 7 below presents the yearly mean for the AltX firms panel variables and JSE firms panel variables from 2007 to 2020.

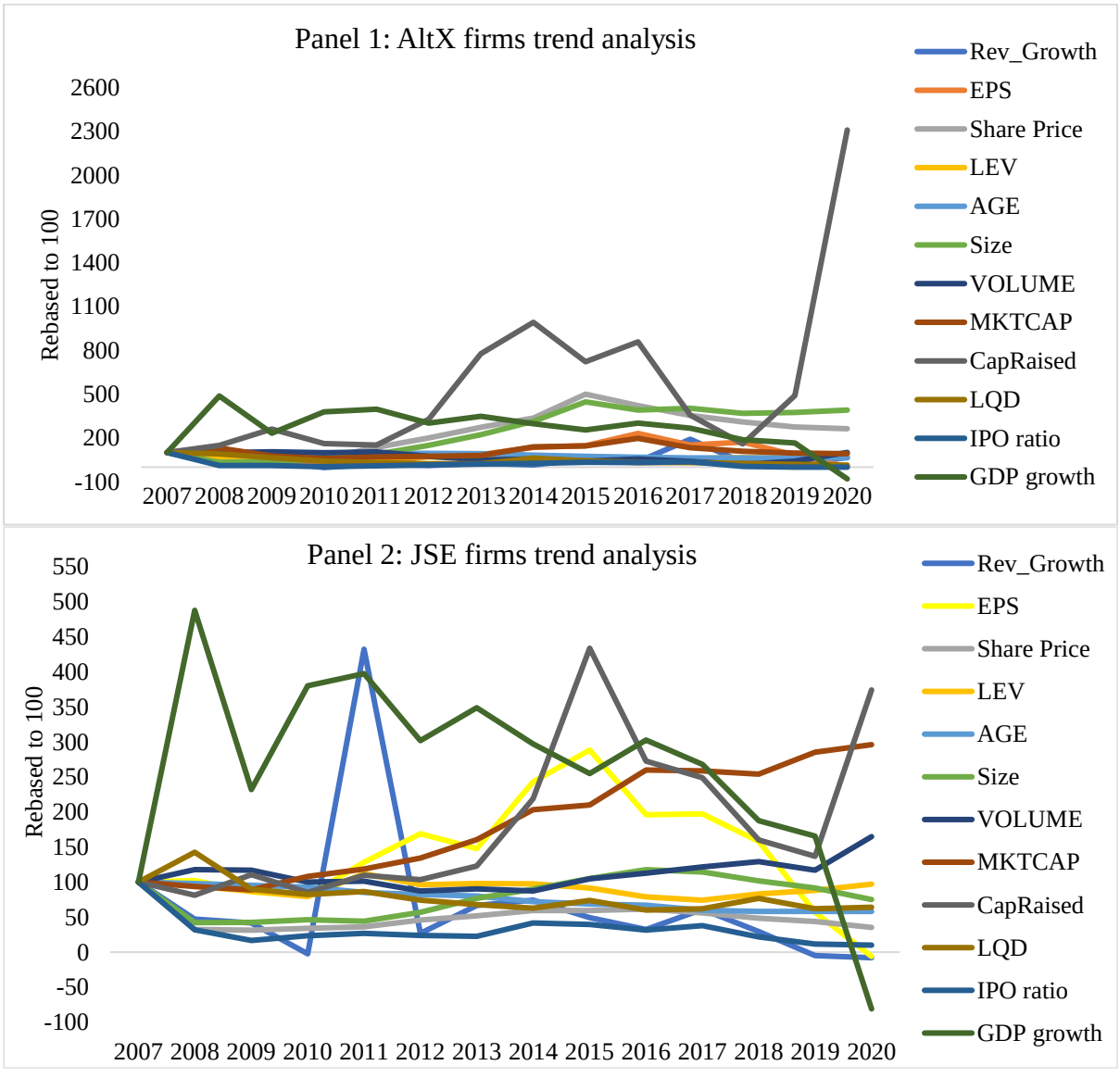
Table 7: Yearly mean description of the data

Year	Rev_ Growth	EPS	Share Price (Cents)	LEV	AGE	Firm Size (Millions)	VOLUME (Millions)	MKTCAP (Millions)	CapRaised (Millions)	*LQD	*IPO ratio	*GDP growth
Panel 1 AltX firms												
2007	88.53	24.91	207.09	68.23	13.00	599.43	16.68	18876.61	21.08	29.38	52.11	2.52
2008	24.44	14.80	72.54	49.84	12.85	197.18	16.39	24726.95	31.37	26.62	5.48	12.31
2009	38.61	3.60	139.36	52.34	12.71	225.91	17.55	14389.81	55.19	19.00	5.56	5.85
2010	-2.53	4.56	126.50	49.66	12.71	319.64	16.57	11252.82	34.03	12.00	1.56	9.58
2011	18.57	6.79	280.25	46.79	12.25	525.62	17.30	13145.23	31.74	9.00	5.08	10.03
2012	10.46	18.55	413.13	47.84	12.25	891.67	12.28	14117.48	69.03	7.00	7.41	7.61
2013	23.54	21.38	565.88	43.26	11.94	1339.23	8.39	15255.15	163.76	6.80	10.64	8.79
2014	13.25	33.76	695.14	40.46	10.81	1882.21	9.26	26222.80	209.27	17.90	13.64	7.50
2015	49.87	36.46	1036.42	41.17	9.69	2681.68	6.78	27534.39	152.23	13.01	17.02	6.43
2016	34.05	57.46	874.17	40.91	8.93	2344.03	9.17	37256.15	180.80	9.27	16.67	7.63
2017	169.21	37.78	736.32	39.52	8.24	2419.02	6.72	25097.64	75.04	9.31	20.00	6.76
2018	28.81	42.97	642.94	44.33	8.24	2216.30	2.97	20362.10	33.51	7.42	2.78	4.73
2019	7.62	20.72	570.53	42.81	8.24	2243.71	6.87	18141.29	103.26	5.93	0.00	4.18
2020	60.21	0.34	543.12	46.18	8.24	2342.72	16.81	17297.02	487.12	4.05	0.00	-2.04
Panel 2 JSE firms												
2007	90.19	37.87	1715.60	46.26	13.00	2963.03	283.48	5645902.92	59.03	58.11	14.69	2.52
2008	42.55	38.68	555.38	43.74	12.75	1248.47	333.76	5290212.63	47.95	82.87	4.71	12.31

2009	37.54	32.64	538.50	40.18	12.40	1254.59	331.43	5019399.88	65.32	52.26	2.44	5.85
2010	-2.19	30.31	580.67	36.68	12.08	1372.67	283.88	6092912.93	50.24	47.80	3.44	9.58
2011	389.94	48.68	619.83	51.90	11.06	1306.18	287.02	6703029.89	64.78	50.30	3.94	10.03
2012	24.37	63.94	785.14	44.43	10.71	1691.74	247.37	7593834.53	61.06	43.10	3.48	7.61
2013	60.24	55.96	886.26	45.29	10.43	2280.14	255.57	9071523.91	72.50	39.40	3.34	8.79
2014	66.79	92.11	1020.35	45.06	9.39	2657.65	247.93	11478108.38	129.31	36.57	6.14	7.50
2015	44.34	109.26	1022.83	42.33	8.91	3119.41	296.44	11864214.90	256.08	42.80	5.82	6.43
2016	29.03	74.34	1057.74	36.57	8.69	3487.75	319.28	14686614.73	161.04	34.90	4.64	7.63
2017	54.94	74.75	961.81	34.32	7.77	3390.20	345.21	14601268.99	146.96	35.90	5.57	6.76
2018	26.47	59.80	833.27	38.40	7.57	3020.34	366.87	14334034.59	94.59	44.70	3.23	4.73
2019	-4.35	21.61	748.98	40.76	7.57	2714.72	331.21	16110933.06	80.74	35.90	1.69	4.18
2020	-7.18	-2.27	607.51	45.01	7.55	2227.38	467.37	16718785.90	220.80	37.20	1.47	-2.04

*Ratios calculated using full-year figures and as a result, the ratio for each year was considered.

Figure 5: Trend analysis of firms' variables and selected stock market variables



*Size denotes firm size

Table 7 present the yearly mean for firms' variables and stock market variables. In 2010, both AltX (-2.53) and JSE (-2.19) small businesses experienced negative revenue growth, with JSE listed small businesses further experiencing negative revenue growth in 2019 and 2020. AltX firms have a high earnings per share mean (57.46) in 2016 and the lowest (0.34) in 2020, while

SMEs on the JSE reported high EPS yearly mean (109.26) in 2015 and the lowest (-2.27) in 2020. The yearly mean share prices of small businesses on AltX and JSE increased from 2008 to 2016, then began to decline. The annual leverage mean for small businesses ranges between 30 and 68. This could imply that businesses continue to use debt to fund their operations. We observe a yearly increase in the average size of firms listed on AltX. The IPO mean for both the JSE and the AltX is decreasing. The declining trend in IPO ratios indicates that fewer companies are listing on an exchange. We also note an increasing trend in the market cap mean of the JSE.

Figure 5 depicts the trend of the firm and selected stock market variables using the variables' yearly means. On average, we observe a fluctuation trend for stock market variables and a noticeable slightly declining trend for small business variables. Economic constraints caused by the Covid 19 pandemic have resulted in negative GDP growth in 2020. In addition, we observe a significant increase in capital raised mean in 2020 for both AltX and JSE, which can be attributed to a decrease in the number of firms raising capital since the mean is calculated by dividing total capital raised by total number of firms raising capital.

4.3 The relationship between variables

The correlation coefficient results of the variables considered in the panel models for AltX listed SMEs and JSE listed SMEs are reported in Table 8 below.

Table 8: Correlation matrix

Variable	Revenue Growth	EPS	Share Price	LEV	AGE	Firm Size	VOLUME	MKTCAP	CapRaised	LQD	IPO ratio	GDP growth
Panel 1: Correlation matrix for AltX firms												
Revenue Growth	1											
EPS	0.057	1										
Share Price	-0.013	0.376*	1									
LEV	0.02	-0.073	-0.196*	1								
AGE	-0.156*	-0.120*	-0.269*	0.302*	1							
Firm Size	0.028	0.250*	0.758*	-0.140*	-0.161	1						
VOLUME	0.028	-0.172*	-0.220*	0.127*	0.300*	-0.173*	1					
MKTCAP	0.036	0.155*	0.221*	-0.069	-0.165*	0.141*	-0.286*	1				
CapRaised	-0.022	0.051	0.170*	-0.08	-0.029	0.092	-0.036	0.486*	1			
LQD	-0.001	0.004	-0.117*	0.087	0.321*	-0.136*	0.313*	0.076	0.095	1		
IPO ratio	0.133*	0.092	0.069	0.009	0.009	0.06	0.044	0.529*	0.164*	0.439	1	
GDP growth	-0.035	0.063	-0.042	-0.016	0.282*	-0.112*	-0.1	-0.064	-0.039	0.383*	-0.451*	1
Panel 2: correlation matrix for JSE firms												
Revenue Growth	1											
EPS	-0.003	1										
Share Price	-0.007	0.438*	1									
LEV	-0.052	-0.008	0.048	1								
AGE	0.051	-0.131*	-0.067	0.163*	1							
Firm Size	0.005	0.203*	0.541*	-0.026	0.029	1						
VOLUME	-0.09	-0.160*	-0.109*	-0.014	-0.288*	0.01	1					
MKTCAP	-0.123*	-0.092	-0.015	-0.041	-0.449*	0.105*	0.636*	1				
CapRaised	0.043	0.186*	0.130*	0.009	0.096	0.055	-0.385*	-0.270*	1			
LQD	0.07	-0.006	-0.058	0.038	0.325*	-0.114*	0.122*	-0.723*	-0.006	1		
IPO ratio	0.077	0.170*	0.204*	-0.016	0.169*	0.074	-0.501*	-0.423*	0.604*	0.176*	1	
GDP growth	0.116*	0.161*	0.07	-0.014	0.293*	-0.007	-0.848*	-0.701*	0.297*	0.344*	0.448*	1

* Correlation is significant at the 0.05 level of significance (2-tailed)

Table 8 presents the relationship between variables analysis output using correlation matrix. We observe a significant correlation between dependent and independent variables. In Panel 1, we observe that revenue growth is negatively correlated with age (r=-0.156). EPS is positively correlated with share price (r=0.376), size (r=0.250), and MKTCAP (r=0.155), and negatively correlated with age (r=-0.120) and volume (r=-0.172). The share price has a significant positive correlation with size (r=0.758), MKTCAP (r=0.221), CapRaised (r=0.170), and a negative correlation with LEV (r=-0.196), age (r=-0.269), VOLUME (r=-0.220), and LQD (r=-0.117).

Panel 2 result reveal that revenue growth is correlated with MKTCAP (r=-0.123) and GDP growth (r=0.116). EPS has a correlation with share price (r=0.438), age (r=-0.131), size (r=0.203), volume (r-0.160), CapRaised (r=0.186), IPO ratio (r=0.170), and GDP growth (r=0.161), DUALLISTED (r=-0.120), firm size (r=0.541), volume (r=-0.109), CapRaised (r=0.130), and IPO ratio (r=0.204).

Table 8 further shows that in both the panel 1 and panel 2 samples, several of the independent variables are correlated. Since several independent variables are correlated, Variance Inflation Factors (VIFs) will be used in the regression analysis to investigate multicollinearity. According to O'brien (2007) a VIF of 10 or even 4 corresponding to a tolerance level of 0.10 or 0.25 has been considered as a general guideline to indicate serious collinearity problem. Menard (1995) suggest a tolerance level of less than 0.2 as a signal of serious collinearity problem. In this study, collinearity is indicated by the tolerance level of less than 0.2 and corresponding VIF of 10 or less.

4.4 Normality Test using Shapiro-Wilk tests

The Shapiro-Wilk test was used to assess the normality of the dependent variables, and the results are shown in table 9 below.

Table 9: Shapiro-Wilk tests results for dependent variables

	Panel 1: AltX firms		Panel 2: JSE Firms	
Variable	**Statistic**	**Prob.**	**Statistic**	**Prob.**
Revenue Growth	11.567	0.000	12.694	0.000
Log Revenue Growth	1.640	0.050	4.080	0.000
EPS	9.386	0.000	9.199	0.000
Log EPS	5.267	0.000	7.934	0.000
Share Price	9.938	0.000	8.811	0.000
Log Share Price	3.993	0.000	7.417	0.000

From Table, we observe that apart from LogRevenue growth for AltX firms (p-value=0.05), all variables have p-value of less than 0.05, indicating that they are not normally distributed and fitting a regression analysis will yield invalid results. Other transformation methods, such as square root transformation, could be used to transform the variables, but interpreting the results could be difficult. Literature suggest that normality violations should not be a major concern if we have a large sample, i.e., a sample size greater than 30 (Ghasemi & Zahediasl, 2012). To make our data almost normally distributed, we use a logarithm transformation of the variables.

4.5 The relationship between stock markets and their listed firms

4.5.1 The impact of the stock markets on the growth of listed small companies

Panel 1: AltX firms' model (1) analysis outputs

Firstly, the Hausman test was performed to determine which model, between the fixed effects and random effects models, should be used to give valid results.

Table 10: Hausman test results

	Coefficients			
	(b) fe	(B) re	9(b-B) Difference	sqrt(diag(V_b-V_B)). S.E.
LEV	.034	.018	.016	.005
InFirmSize	.182	.373	-.191	.122
InVOLUME	-.040	-.035	-.005	.004
InMKTCAP	-.721	-.837	.116	.
InCapRaised	-.066	-.129	.063	.
LQD	.020	.026	-.006	.
IPO Ratio	.026	.022	.004	.006
GDP growth	.036	.035	.001	.

chi2(8) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B) =18.32
Prob>chi2 = 0.019

Hausman test output (Table 10) indicates that the fixed effects model should be used as the null hypothesis that random effects model being the appropriate model is rejected (Prob>chi2 = 0.019<0.05).

Table 11: Variance inflation factors

Variable	VIF	Tolerance
InVOLUME	3.74	0.267
InMKTCAP	3.32	0.301
IPO Ratio	3.08	0.325
GDP Growth	2.75	0.363
InCapRaised	1.88	0.531
LQD	1.62	0.617
InFirmSize	1.29	0.772
LEV	1.14	0.873
Mean VIF	2.21	

The VIF results in Table 11 show that all variables have tolerance levels of greater than 0.2, suggesting that there are no serious multicollinearity issues in the regression analysis.

Table 12: Cameron & Trivedi's decomposition of IM-test results

Source	Chi2	df	p
Heteroscedasticity	27.24	19	0.099
Skewness	8.13	7	0.322
Kurtosis	1.87	1	0.171
Total	37.24	27	0.091

The Heteroscedasticity test was conducted using the white test and the results are presented in Table 12. The white test results indicate that there is no heteroscedasticity in the data as we fail to reject the null hypothesis of homoscedasticity (Prob.>chi2=0.099>0.05). When another heteroscedasticity test (Modified Wald test for groupwise heteroscedasticity in fixed effect) was conducted, the results indicate that there is heteroscedasticity. As a result, robust standard error was used to correct it.

Table 13: Panel regression output

R-sq			No. of obs.	Obs. Per group			F (8, 26)	Prob > F
Within	Between	Overall		min.	avg.	max.		
0.165	0.006	0.078	133	1	4.9	9	3.81	0.004

	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]	
Log revenue growth						
LEV*	.034	.010	3.28	0.003	.013	.055
InFirmSize	.182	.154	1.18	0.250	-.136	.499
InVOLUME	-.040	.395	-0.10	0.920	-.851	.771
InMKTCAP	-.721	.473	-1.52	0.139	-1.694	.251
InCapRaised	-.066	.134	-0.49	0.628	-.342	.210
LQD	.020	.024	0.80	0.428	-.030	.070
IPO Ratio	.026	.023	1.09	0.285	-.023	.074
GDP growth	.036	.077	0.46	0.649	-.123	.194
Constant	7.756	6.521	1.19	0.245	-5.649	21.160

*Significant at 5% confidence level **Significant at 10% confidence level

The results in Table 13 show that the model is highly significant (F (8,26) = 3.81, P=.004<0.05). The overall R-squared = 0.078, indicating that the model explains 7.8% of variation in the data. The results interestingly show that only LEV is significant at 5% confidence level. The coefficient of LEV is positive which means that the leverage affects revenue growth positively. This could imply that small businesses listed on AltX continue to rely on debt as their primary source of funding for future growth opportunities. Time invariant variables were omitted on the fixed effects model estimation.

Panel 2: JSE firms' Model (1) analysis outputs

Table 14: Hausman test result

	Coefficients			sqrt(diag(V_b-V_B)). S.E.
	(b) fe	(B) re	(b-B) Difference	
LEV	.001	-.010	.011	.004
InFirmSize	.656	.174	.482	.135
InVOLUME	-.752	-.216	.536	.
InMKTCAP	1.627	-1.242	-.385	.
InCapRaised	.338	.171	.167	
LQD	.003	.006	-.003	
IPO ratio	-.027	.054	-.081	

chi2(8) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B) = 20.07
Prob>chi2 = 0.0101

Hausman test (Table 14) results indicate that the fixed effects model should be used as the null hypothesis of the random effects model is the appropriate model is rejected (Prob>chi2 = 0.0101<0.05).

Table 15: Variance inflation factors

Variable	VIF	Tolerance
InMKTCAP	8.57	0.117
LQD	6.72	0.149
InVolume	4.06	0.246
GDP growth	2.38	0.420

InCapRaised	1.97	0.506
IPO ratio	1.89	0.529
AGE	1.39	0.721
DUALLISTED	1.10	0.911
LEV	1.09	0.921
InFirmSize	1.08	0.925
Mean VIF	3.03	

The VIF was used to test for multicollinearity, and the results are presented in Table 15. InMKTCAP (0.117) and LQD (0.149) indicate serious collinearity problem due to tolerance level of less than 0.2. To solve this issue, we dropped InMKTCAP and performed the test again and all the variables' tolerance level were more than 0.2.

Table 16: Cameron & Trivedi's decomposition of IM-test results

Source	**Chi2**	**df**	**p**
Heteroscedasticity	57.2	37	0.018
Skewness	6.98	8	0.539
Kurtosis	6.49	1	0.011
Total	70.67	46	0.011

The white test results (Table 16) indicate that there is heteroscedasticity in the data as we reject the null hypothesis of homoscedasticity (Prob>chi2= 0.018<0.05). As a result, the Generalized Least Squares (GLS) was used to solve the heteroscedasticity in the panel regression model.

Table 17: Cross-sectional time-series FGLS regression output for JSE panel model (1)

Estimated			No. of	Obs. Per group			Log likelihood	Wald chi2(12)	Prob > chi2
covariances	autocorrelation	coefficients	obs.	min.	avg.	max.			
1	0	15	242	1	5.5	12	-392.525	66.1	0.000

	Coef.	Std. Err.	Z	Prob>z	[95% Conf.	Interval]
Log revenue growth						
LEV*	-.012	.003	-3.63	0.000	-.018	-.005
AGE	-.024	.036	-0.66	0.511	-.095	.048
DUALLISTED	.305	.276	1.11	0.269	-.236	.846
InFirmSize	.096	.089	1.08	0.278	-.078	.270
InVOLUME	-1.059	.774	-1.37	0.171	-2.576	.458
InCapRaised	.184	.211	0.87	0.383	-.229	.598
LQD*	.041	.012	3.56	0.000	.018	.064
IPO ratio	.073	.051	1.45	0.147	-.026	.173
GDP growth	-.021	.044	-0.49	0.626	-.107	.064
Industry2	-.823	.574	-1.43	0.152	-1.948	.302
Industry3	-.225	.649	-0.35	0.729	-1.496	1.046
Industry4	-.001	.475	-0.00	0.998	-.932	.929
Industry5	.337	.710	0.48	0.635	-1.054	1.728
Industry6**	-.853	.503	-1.70	0.090	-1.839	.132
Constant	11.280	9.264	1.22	0.223	-6.876	29.436

*Significant at 5% confidence level **Significant at 10% confidence level

From Table 17 above, we observe that LEV (p-value= 0.000) is significant at 5% confidence level and has a negative impact on the revenue of JSE small businesses. This implies that small businesses in this market should consider using equity financing to fund their operations rather than debt, which reduces revenue growth. LQD (p-value=0.000) is also significant at 5% confidence level. As stated in the literature review, liquidity is an important factor in a

successful listing. This suggests that small businesses on the JSE benefit from increased liquidity in the stock market. Industry6 (p-value = 0.09) is significant at 10% level and denotes the Industrials industry. Industry6 has a negative relationship with revenue growth, implying that small businesses listed in this sector will see a decline in revenue.

4.5.2 The impact of the stock markets on the operating performance of listed small companies

Panel 1: AltX firms' Model (2) analysis outputs

Table 18: Hausman test results

	Coefficients			sqrt(diag(V_b-V_B)). S.E.
	(b) fe	(B) Re	(b-B) Difference	
LEV	-.005	-.006	.000	.002
InFirmSize	.662	.661	.001	.031
InVOLUME	-.338	-.326	-.012	.050
InMKTCAP	.118	.140	-.022	.055
InCapRaised	-.155	-.169	.013	.020
LQD	.035	.035	.000	.002
IPO ratio	-.004	-.005	.001	.003
GDP growth	.159	.156	.003	.010

chi2(8) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B) = 0.74
Prob>chi2 = 0.999

Hausman test results (Table 18) indicate that the random effects model should be used as we fail to reject the null hypothesis of the random effects model is the appropriate model (Prob>chi2 = 0.999>0.05).

Table 19: Breusch and Pagan Lagrangian multiplier test results

Ho: Constant variance
Variables: fitted values of logEPS
chi2(1) = 0.38
Prob > chi2 = 0.5398

The Breusch-Pagan Lagrange multiplier (LM) was carried out to further choose which model between the random effects model and the pooled OLS regression model should be used to give valid results and the model output is presented in Table 19. The results indicate that the pooled OLS regression model should be used as we fail to reject the null hypothesis that the variances across entities is zero (Prob > chibar2 = 0.539>0.05). Since we failed to reject the null hypothesis of the Breusch-Pagan test, then heteroscedasticity is not present.

Table 20: Variance inflation factors test results

Variable	VIF	Tolerance
InVOLUME	4.19	0.239
Industry4	3.37	0.296
InMKTCAP	3.23	0.309
GDP growth	2.81	0.355
InFirmSize	2.80	0.357
Industry6	2.67	0.375

AGE	2.70	0.370
IPO ratio	2.56	0.390
InCapRaised	2.02	0.496
Industry3	1.81	0.552
Industry7	1.79	0.560
Industry8	1.79	0.560
leverage	1.64	0.611
DUALLISTED	1.59	0.631
LQD	1.50	0.665
Industry2	1.33	0.751
Industry5	1.24	0.809
Mean	2.30	

The VIF results output in Table 20 show that all variables tolerance level is above 0.2, indicating that there is no potential serious collinearity problem.

Table 21: Panel regression output

No. of observations	F (17, 141)	Prob>F	Adj. R-squared	Root MSE
159	5.77	0.000	0.339	1.444

	Coef.	**Std. Err.**	**T**	**P>|t|**	**[95% Conf. Interval]**	
Log EPS						
LEV	.001	.007	0.12	0.907	-.013	.015
AGE	-.052	.058	-0.90	0.368	-.167	.062
DUALLISTED*	-.881	.332	-2.65	0.009	-1.538	-.224
InFirmSize*	.700	.110	6.35	0.000	.482	.917
InVOLUME	-.012	.432	-0.03	0.979	-.865	.842
InMKTCAP	.365	.542	0.67	0.502	-.707	1.436
InCapRaised*	-.363	.174	-2.09	0.039	-.707	-.019
LQD	.028	.025	1.15	0.253	-.020	.077
IPO ratio	-.010	.023	-0.41	0.684	-.056	.037
GDP growth	.121	.098	1.24	0.217	-.072	.314
Industry2	-.480	.844	-0.57	0.571	-2.148	1.189
Industry3	-1.149	.751	-1.53	0.128	-2.635	.336
Industry4	.713	.440	1.62	0.108	-.158	1.583
Industry5	-.205	1.142	-0.18	0.858	-2.463	2.054
Industry6**	.767	.421	1.82	0.070	-.065	1.600
Industry7*	1.356	.509	2.66	0.009	.350	2.361
Industry8	1.146	.700	1.641	0.104	-.238	2.530
Constant	-3.191	6.644	-0.48	0.632	-16.325	9.943

*Significant at 5% confidence level; **Significant at 10% confidence level

The model is highly significant at 5% confidence level as shown in Table 21. The Adj. R-squared = 0.339, which means that 33.95% of the variation in the data is explained by the model. The analysis output indicates that DUALISTED (p-value=0.009), InFirmSize (p-value=0.000), InCapRaised (p-value=0.039), Industry6 (p-value=0.070), and Industry7 (p-value=0.009) are statistically significant. DUALISTED and CapRaised have a negative impact on AltX small businesses EPS. This is not surprising given that companies incur costs when raising capital as well as costs to maintain listing on all listing venues when dual listed. This implies that the costs for capital raising, and dual listing outweigh the benefits. We also observe a positive relationship between Firm Size, Industries6 and 7, and AltX small business EPS. Industries 6 and 7 denote industrials and technology industries, respectively. This implies that companies in the industrial and technology sectors will experience higher EPS than companies in other industries.

Panel 2: JSE firms' Model (2) analysis outputs

Table 22: Hausman test results

	Coefficients			
	(b) fe	(B) Re	(b-B) Difference	sqrt(diag(V_b-V_B)). S.E.
LEV	-.063	.133	-.196	.211
AGE	-62.092	-5.496	-56.596	115.619
InFirmSize	42.762	37.415	5.348	5.915
InVOLUME	-30.229	-30.229	10.917	3.322
InMKTCAP	-18.040	-12.883	-5.157	3.160
InCapRaised	25.297	30.890	-5.593	2.419
LQD	.709	.639	.070	
IPO ratio	-.844	-.872	.028	.847
GDP growth	3.005	3.087	-.082	.311

chi2(9) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B) = 13.90
Prob>chi2 = 0.1259

The Hausman test results (Table 22) indicate that the random effects model should be used as we fail to reject the null hypothesis of random effects model being the appropriate model (Prob>chi2 = 0.1259>0.05).

Table 23: Breusch-Pagan LM test results

Test: Var(u) = 0
chibar2(01) = 22.77
Prob > chibar2 = 0.0000

The Breusch-Pagan Lagrange multiplier (LM) test was conducted to further choose which model between random effects model and pooled OLS regression model should be used to give valid results. The results in Table 23 indicate that the random effects regression model should be used as we reject the null hypothesis that the variances across entities is zero (Prob > chibar2 = 0.000<0.05).

Table 24: Variance inflation factors

Variable	VIF	Tolerance
InMKTCAP	8.57	0.117
LQD	6.16	0.162
InVOLUME	5.35	0.187
GDP growth	3.68	0.271
IPO ratio	2.25	0.445
InCapRaised	2.13	0.470
AGE	2.06	0.487
DUALLISTED	1.62	0.618
InFirmSize	1.41	0.709
LEV	1.10	0.911
Mean	3.19	

The VIF results in Table 24 indicate that there seems to be a serious multicollinearity problem as far as InMKTCAP (0.117), LQD (0.162) and InVOLUME (0.187) are concerned. To solve this problem, we dropped the InMKTCAP and carried out the test again. The results shows that

no serious correlation existed between variables as all variables have tolerance levels greater than 0.2.

Table 25: Cameron & Trivedi's decomposition of IM-test results

Source	Chi2	df	p
Heteroscedasticity	235.48	99	0.000
Skewness	48.23	15	0.000
Kurtosis	3.13	1	0.000
Total	286.84	115	0.000

The white test results (Table 25) indicate that there is heteroscedasticity in the data as we reject the null hypothesis of homoscedasticity (Prob>chi2= 0.018<0.00). As a result, the GLS regression model was used to solve the heteroscedasticity in the panel regression model.

Table 26: Cross-sectional time-series FGLS regression output

Estimated			No. of obs.	Obs. Per group			Log likelihood	Wald chi2(12)	Prob > chi2
covariances	autocorrelation	coefficients		min.	avg.	max.			
1	0	15	374	1	7.63	14	-2304.12	140.98	0.000

	Coef.	Std. Err.	Z	Prob>z	[95% Conf. Interval]	
Log EPS						
LEV	.254	.208	1.22	0.222	-.154	.661
AGE*	-7.579	2.621	-2.89	0.004	-12.716	-12.716
DUALLISTED	7.918	19.023	0.42	0.677	-29.367	45.203
InFirmSize*	31.996	5.638	5.67	0.000	20.945	43.047
InVOLUME	-65.298	60.490	-1.08	0.280	-183.855	53.260
InCapRaised*	36.734	15.971	2.30	0.021	5.431	68.036
LQD	.850	.918	0.93	0.355	-.950	2.649
IPO ratio	-1.112	4.291	-0.26	0.796	-9.521	7.298
GDP	3.085	3.323	0.93	0.353	-3.427	9.598
Industry2	17.276	38.454	0.45	0.653	-58.092	92.643
Industry3*	171.172	45.580	3.76	0.000	81.837	260.507
Industry4	17.930	25.219	0.71	0.477	-31.498	67.358
Industry5*	-196.711	46.637	-4.22	0.000	-288.118	-105.303
Industry6	11.897	26.351	0.45	0.652	-39.751	63.544
Constant	137.808	715.319	0.19	0.847	-1264.191	1539.807

*Significant at 5% confidence level; **Significant at 10% confidence level

From the regression output presented in Table 26, we observe that AGE (p-value=0.004) and Industry5 (p-value=0.000) are both significant at 5% and have a negative relationship with EPS for JSE small businesses. Health care industry is presented by Industry5. The age effect implies that the longer the small business has been listed on the JSE, the more likely the EPS will fall. EPS for JSE listed small businesses in the health care industries will decline when compared to companies in other industries. From Table 26, we further observe that InFirmSize (p-value=0.000), InCapRaised (p-value=0.021) and Industry3 (p-value=0.000) are also significant at 5% level and affect EPS positively. Industry3 represent consumer services industry. This implies that the availability of equity capital for small businesses listed on the JSE will enhance their earnings per share. Furthermore, as the market capitalisation of these companies rises, so will their EPS.

4.5.3 The impact of the stock markets on the market performance of listed small companies

Panel 1: AltX firms' Model (3) analysis outputs

Table 27: Results of Hausman test

	Coefficients			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B)). S.E.
	fe	Re	Difference	
LEV	-.006	-.005	-.000	.001
InFirmSize	.821	.830	-.010	.018
InVOLUME	-.032	-.024	-.008	.018
InMKTCAP	-.173	-.178	.006	.021
InCapRaised	.116	.113	.003	.007
LQD	-.005	-.006	.001	.001
IPO ratio	.010	.010	-.000	.001
GDP growth	.023	.024	-.002	.003

chi2(8) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B) = 1.32
Prob>chi2 = 0.9954

The Hausman test results (Table 27) indicate that the random effects model should be used as we fail to reject the null hypothesis of random effects model being the appropriate model (Prob>chi2 = 0.9954>0.05).

Table 28: Breusch and Pagan Lagrangian multiplier test results

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of logprice
chi2(1) = 3.25
Prob > chi2 = 0.0715

The Breusch-Pagan Lagrange multiplier (LM) test was carried to further choose which model between random effects model and pooled OLS regression model should be used to give valid results. The results (Table 28) indicate that the pooled OLS regression model should be used as we fail to reject the null hypothesis that the variances across entities is zero (Prob > chibar2 = 0.0715>0.05).

Table 29: Variance inflation factors test results

Variable	VIF	Tolerance
InVOLUME	4.18	0.239
InMKTCAP	3.44	0.290
Industry4	3.06	0.326
Industry6	2.88	0.348
IPO ratio	2.87	0.349
AGE	2.83	0.353
GDP growth	2.71	0.369
InFirmSize	2.30	0.435
InCapRaised	1.93	0.518
Industry8	1.52	0.657
LEV	1.52	0.659
LQD	1.48	0.675
Industry5	1.34	0.747
Mean VIF	2.27	

The VIF results output in Table 29 show that all variables tolerance level is above 0.2, indicating that there is no potential serious collinearity problem.

Table 30: Cameron & Trivedi's decomposition of IM-test results

Source	Chi2	df	p
Heteroscedasticity	173.13	108	0.000
Skewness	15.35	17	0.570
Kurtosis	0.70	1	0.403
Total	189.18	126	0.000

The white test results (Table 30) indicate that there is heteroscedasticity in the data as we reject the null hypothesis of homoscedasticity (Prob>chi2= 0.000<0.00). As a result, pooled OLS model with robust standard error was fitted to correct the regression model for heteroscedasticity.

Table 31: Panel regression output

No. of observations	F (17, 202)	Prob>F	R-squared	Root MSE
220	168.75	0.000	0.855	0.695

	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]	
Log share price						
LEV	-.002	.003	-0.90	0.369	-.008	.003
AGE*	-.132	.027	-4.84	0.000	-.186	-.078
DUALLISTED**	-.301	.153	-1.96	0.051	-.604	.001
InFirmSize*	.916	.045	20.56	0.000	.828	1.004
InVOLUME	.030	.168	0.18	0.857	-.301	.362
InMKTCAP	-.220	.213	-1.03	0.303	-.640	.200
InCapRaised	.091	.068	1.35	0.179	-.042	.225
LQD	-.009	.010	-0.92	0.358	-.028	.010
IPO ratio	-.009	.010	-0.92	0.358	-.028	.010
GDP growth	.033	.036	0.94	0.350	-.037	.104
Industry2	.278	.232	1.20	0.232	-.180	.736
Industry3	.342	.252	1.36	0.177	-.155	.839
Industry4**	.373	.213	1.75	0.081	-.047	.793
Industry5	-.041	.231	-0.18	0.860	-.495	.414
Industry6*	.736	.171	4.30	0.000	.398	1.074
Industry7*	1.595	.137	11.61	0.000	1.324	1.865
Industry8*	2.422	.177	13.72	0.000	2.074	2.77
Constant	1.505	2.546	0.59	0.555	-3.514	6.524

*Significant at 5% confidence level; **Significant at 10% confidence level

The results in Table 31 show that the model is highly significant, with a p-value = 0.000 for f-statistics. R-squared = 0.855, indicating that the model explains 85.5 percent of the variation in the data. AGE (p-value=0.00), DUALISTED (p=0.051), InFirmSize (p-value=0.00), Industry4 (p-value=0.08), Industry6 (p-value=0.00), Industry7 (p-value=0.00), and Industry8 (p-value=0.00) are all statistically significant, according to the findings. AGE and DUALISTED have a negative impact on AltX listed companies share price, implying that small businesses that have been dual listed and those that have been listed for a longer period of time will see a decrease in share price in the long term. Firm size, as measured by market capitalisation, has a positive impact on share price, which is not surprising given that market cap is a function of share price and shares in issue. Industries4, 6, 7, and 8 have a positive impact on share price. This means that if small businesses do business in industries4, 6, 7, or 8, their share price will be higher than if they do business in industry 5.

Panel 2: JSE firms' Model (3) analysis outputs

Table 32: Hausman test results

	Coefficients			
	(b) fe	(B) Re	(b-B) Difference	sqrt(diag(V_b-V_B)). S.E.
LEV	-.069	.131	-.200	.213
AGE	-144.197	-12.088	-132.109	307.577
InFirmSize	338.699	341.973	-3.274	6.489
InVOLUME	-164.935	-167.523	2.588	20.249
InMKTCAP	-52.058	-50.369	-1.689	14.083
InCapRaised	-35.903	-32.205	-3.698	5.492
LQD	-2.442	-2.504	.0620	.488
IPO ratio	46.324	45.571	.753	1.592
GDP growth	-7.448	-7.448	-.180	.992

chi2(9) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B) = 1.78
Prob>chi2 = 0.9945

The Hausman test results presented in Table 32 indicate that the random effects model should be used as we fail to reject the null hypothesis of random effects model being the appropriate model (Prob>chi2 = 0.9945>0.05).

Table 33: Breusch and Pagan Lagrange multiplier test results

Test:	Var(u) = 0
chibar2(01) =	600.66
Prob > chibar2 =	0.000

The Breusch-Pagan Lagrange multiplier (LM) test was conducted to further choose which model between the random effects model and the pooled OLS regression model should be used to give valid results. The results (Table 33) indicate that the random effects model should be used as we to reject the null hypothesis that the variances across entities is zero (Prob > chibar2 = 0.000<0.05).

Table 34: Variance inflation factors results

Variable	VIF	Tolerance
InMKTCAP	8.58	0.117
LQD	6.26	0.160
InVOLUME	5.30	0.189
GDP growth	3.71	0.270
IPO ratio	2.25	0.444
InCapRaised	2.11	0.474
AGE	2.03	0.492
DUALLISTED	1.63	0.612
InFirmSize	1.40	0.714
LEV	1.09	0.916
Mean VIF	3.19	

The VIF results in Table 34 indicate InMKTCAP (0.117), LQD and (0.160) InVOLUME (0.189) have a VIF tolerance value of less than 0.2 indicating serious collinearity problem. We dropped the InMKTCAP and ran the test again and the results show that all variables' tolerance level is above 0.2.

Table 35: Cameron & Trivedi's decomposition of IM-test results

Source	Chi2	df	p
Heteroscedasticity	260.93	91	0.000
Skewness	47.61	14	0.000
Kurtosis	4.44	1	0.035
Total	312.98	106	0.000

The white test results (Table 35) indicate that there is heteroscedasticity in the data as we reject the null hypothesis of homoscedasticity (Prob>chi2= 0.000<0.00). As a result, The GLS regression model is applied to solve the heteroscedasticity problem.

Table 36: Cross-sectional time-series FGLS regression output

Estimated			No. of obs.	No. of groups	Obs. Per group			Log likelihood	Wald chi2(12)	Prob > chi2
covariances	autocorrelation	coefficients			min.	avg.	max.			
1	0	15	380	49	1	7.755	14	-2929.18	463.11	0.000

	Coef.	Std. Err.	Z	Prob>z	[95% Conf. Interval]	
Log Share Price						
LEV*	2.409	.893	2.70	0.007	.658	4.160
AGE*	-36.160	12.212	-2.96	0.003	-60.094	-12.225
DUALLISTED	68.215	89.195	0.76	0.444	-106.604	243.034
InFirmSize*	408.956	26.236	15.59	0.000	357.535	460.378
InVOLUME	333.702	283.234	-1.18	0.239	-888.831	221.426
InCapRaised	4.293	74.144	0.06	0.954	-141.026	149.612
LQD	-1.243	4.201	-0.30	0.767	-9.477	6.991
IPO ratio**	35.860	20.140	1.78	0.075	-3.614	75.333
GDP growth	-6.462	15.520	-0.42	0.677	-36.883	23.957
Industry2	213.147	180.271	1.18	0.237	-140.179	566.472
Industry3*	1248.228	213.901	5.84	0.000	828.99	1667.466
Industry4	-15.677	117.686	-0.13	-0.894	-246.338	214.983
Industry5	69.746	218.218	0.32	0.749	-357.953	497.446
Industry6*	468.902	123.517	3.80	0.000	226.814	710.990
Constant	1600.603	3350.747	0.48	0.633	-4966.741	8167.946

*Significant at 5% confidence level **Significant at 10% confidence level

From the results output in Table 36 above, we observe that LEV (p-value=0.007), AGE (p-value=0.003), InFirmSize (p-value=0.000), Industry3 (p-value=0.000) and Industry6 (p-value=0.000) are statistically significant as 5% level while IPO ratio (p-value=0.075) is significant at 10% level. LEV, InFirmSize, IPO ratio, Industry3 and Industry6 affect share price positively, meaning they increase it while AGE affects it negatively. Industry3 and Industry6 represents the consumer services and Industrials, respectively.

4.6 Chapter summary

This chapter presented the descriptive statistics, normality test, and correlation test results for the panel data. The descriptive analysis results of the panel variables were presented, and we considered the variables' mean, median, standard deviation, and the lowest and highest values. The normality test revealed that the variables were not normally distributed, and we used a logarithm transformation of the variables to make our data almost normally distributed. The correlation test results showed a significant correlation between dependent and independent

variables, as well as correlation between several independent variables. The VIF was used in the regression analysis to investigate multicollinearity.

The panel model analysis results for both the AltX and JSE panels were also presented. It has been found that leverage positively influences the revenue growth of AltX listed small businesses, whereas liquidity positively influences the revenue of JSE listed small businesses. Industrials and leverage have a negative relationship with the growth of JSE listed SMEs.

The findings of the study on the impact of stock markets on the operating performance of listed small companies revealed that dual listing, firm size, capital raised, and industries such as industrials and technology all have a significant impact on AltX companies' EPS. The EPS of JSE listed small businesses was found to be significantly affected by company age, health care and consumer services industries, firm size, and capital raised.

The regression analysis results also revealed that company age, firm size, dual listing, and industries such as financials, industrials, technology, and telecommunications are all statistically significant, which means that they influence the share price of AltX listed small businesses. The share price of JSE listed SMEs was found to be influenced by leverage, age of the company, firm size, IPO ratio and industries such as consumer services and Industrials.

The following chapter discusses the research findings and concludes the study.

CHAPTER 5: DISCUSSIONS AND CONCLUSION

5.1 Introduction

The previous chapter presented and described the panel data analysis results for the study. In this section, we discuss the findings of the research methodology presented in chapter 4 and conclude the study in section 5.2.

5.2 Discussion and conclusion

5.2.1 Discussion

The results of the impact of listing on the stock market on the growth of listed small companies using revenue growth as a proxy show that leverage increases the growth of SMEs listed on AltX. This could imply that small businesses on AltX rely on debt rather than equity capital to grow their operations. This is consistent with the descriptive statistics analysis, which revealed that AltX listed companies had a high level of debt on average. This findings about AltX companies corroborates the findings of Sebastian and Merino (2019), who noted that AltX SMEs continue to face significant challenges in obtaining equity financing and may be forced to pursue alternative financing options such as debt as a result. On the contrary, we found negative relationship between leverage and revenue growth for SMEs listed on the JSE mainboard. These findings on the JSE's listed small businesses is consistent with those of Ahmad et al. (2015) and Omondi and Muturi (2013). We can argue that small businesses on the JSE's main board should fund their operations with equity rather than debt in order to grow their revenue over time.

Market liquidity also affects revenue growth of JSE listed small businesses positively, but not on AltX SMEs. These results support the findings of Omondi and Muturi (2013), who found that liquidity improves the financial performance of listed companies. Liquidity is widely recognized as important to a successful listing (Pagano et al., 2001; Jeng & Wells, 2000; and Peterhoff et al., 2016). Market liquidity indicates the health of the stock exchange and makes it appealing to investors. Investors interested in small businesses appear to prefer JSE listed small businesses over AltX listed companies, owing to a lack of liquidity on AltX (AltX average liquidity for the analysis period was 10.7 percent). It would be advisable for the JSE to implement a support programme aimed at increasing AltX's liquidity and, as a result, enhances the growth of smaller firms listed on AltX.

Furthermore, the results indicate that the industry in which the company operates influences the growth of small businesses. The industrials(industry6) industry has a negative impact on small businesses listed on the JSE but not on AltX, which means that small businesses listed on the JSE in the industrials industry are expected to see a decrease in revenue. This finding confirms that the business environment influences the success of small businesses, as noted by Chittithaworn et al. (2011) and Kemayel (2015). Our analysis found no significant relationship between revenue growth and GDP growth, although we acknowledge that GDP may have an impact on how well the company's industry performs.

In terms of SMEs' operating performance measured by EPS, we found that the firm's size, as measured by market capitalisation, has a positive influence on EPS for small businesses listed on AltX and the JSE. This is consistent with the results of Omondi and Muturi (2013), Almajali et al. (2012), and Liu and Pang (2006), who noted that the size of a company has an impact on its performance and financial growth. This may imply that small businesses with a significant market capitalisation are more likely to see their profits increase over time.

The empirical results also show that industry6 (industrials) and 7 (technology) have a positive relationship with AltX small business EPS, implying that the EPS of firms listed on AltX doing business in these industries will be higher than that of small companies doing business in other industries. In terms of small businesses listed on the JSE main board, Industry5 (Health Care) has a negative impact on the earnings per share (EPS), whereas Industry3 (Consumer Services) impact EPS positively. This demonstrates that industry characteristics vary widely and play an important role in the financial success of publicly traded SMEs. Technological firms are innovative in nature, which provides the opportunity for increased revenue, whereas industry such as healthcare are capital intensive, which is a threat to companies' earnings. It is critical for small businesses to study and understand their industry so that they can take necessary actions to minimize losses that can occur when there is a shift in the industry.

Furthermore, we found that dual listings reduce EPS for AltX small businesses, but this has no effect on SMEs listed on the JSE. This finding contradicts the view by Pagano et al. (2001) that dual listing increases the likelihood of company growth. One explanation could be fees payable in both listing locations if a small business is dual listed, given that AltX companies are already profit constrained. Small businesses interested in dual listing on other exchanges may benefit from stock exchange partnerships to reduce costs. The annual listing cost is seen as a burden especially small business (Nassr & Wehinger, 2016).

The findings also shows that capital raised reduces EPS for AltX listed small businesses while increasing EPS for JSE listed small businesses. The findings on JSE listed small businesses support Liu and Pang (2006) findings that secondary capital positively impacts the growth of small businesses. The AltX finding is related to those of Loughran and Ritter (1997) who noted a decline in profitability of companies engaged in seasoned offerings and small businesses are severely impacted. The AltX results contradict the primary reason for company listing on the stock exchange, which is to raise capital. This may imply that raising capital is not the primary reason for companies to list. These mixed results could explain why AltX firms continue to rely on debt to expand their operations, whereas JSE small businesses appears to use equity capital, which appears to improve their operating performance. The process of raising capital may be a burden for AltX SMEs due to cost involved (Šestanović, 2016). Lukács (2005) emphasised the importance of companies being able to raise funds at a low cost.

Firm age is found to affect the operating performance of JSE listed SMEs negatively but has no significant impact on SMEs listed on AltX. This implies that the longer the small business is listed on the JSE main board, the more likely it is to experience a decline in EPS. Liu and Pang (2006) also reported similar findings whereas Ahinful et al. (2021), and Omondi and Muturi (2013) found opposite results. Despite using different measures of operating performance, Kim et al. (2002), Auret and Britten (2008), and Pastusiak et al. (2016), noted that firms' operating performance decreased after listing in a long term. We recognise that this

behaviour can be attributed to other factors, such as a loss of market share, that are not accounted for in this model.

The results of the impact of listing on the market performance of small businesses, using share price as a proxy, show that firm size influences the share price of small businesses listed on AltX and JSE. This is not surprising given that market capitalisation is a function of share price and company's outstanding shares. As firms share prices increases, market capitalisation is expected to increase. This is consistent with Goergen et al. (2007) `s findings, who found firm size to affect company's performance positively.

Industries 4 (Financials), 6 (Industrials), 7 (Technology), and 8 (Telecommunications) all have a positive impact on the share price of AltX-listed firms, while industries 3 (Consumer services) and 6 (Industrials) have a positive impact on the performance of JSE-listed firms. It implies that companies in these industries will see long-term gains in share prices. Investors buying shares in these companies will realize a positive return.

Furthermore, the results show that age negatively influences the share price of small businesses listed on both AltX and the JSE. This implies that while small businesses may generate high returns in the short run, their share prices are more likely to fall over time. These results support the findings of M'kombe and Ward (2002) and Ritter (1991), who found that IPO performance deteriorates over time. In a short-term companies yield high positive returns as noted by Sohail and Rehaman (2010). This could be because companies listed when they were overvalued (M'kombe & Ward, 2002).

We also found that dual listing has a negative relationship with the share price of AltX companies. This is consistent with the result that dual listing has a negative effect on the EPS of AltX companies. Companies with negative earnings prospects are unappealing to investors because they run the risk of going bankrupt and investors not realizing their returns on investments (Almajali et al., 2012). Listing on more than one exchange will not increase AltX companies' share price volatility because their stock will be unappealing to investors in both stock markets.

Leverage is also found to have a positive impact on the share price of small businesses listed on the JSE, but not significant for AltX companies. This is surprising since, in general, investors are not interested in purchasing shares in companies with increasing debt. Although small businesses on the JSE appear to use equity financing, the use of debt will not harm their market performance. IPO ratio positively affects share price JSE listed small businesses. This confirms that investors are attracted to small businesses listed on a stock exchange with a large number of new listings. A high number of new listings signifies a healthy market (Wright, 2019). The JSE main board has high number of IPOs compared to AltX.

The empirical results of the study show that market-view theory has a significant impact on understanding the difference in performance of publicly traded SMEs. There are significant differences in how AltX and the JSE affect the performance and growth of listed small businesses. Small businesses listed on the JSE appear to benefit more from listing than companies listed on the AltX. This finding is consistent with Irving et al. (2017) findings,

which show that a higher percentage of JSE main board SMEs are satisfied with their listings compared to those on the AltX. Though AltX listed companies appear to use debt and JSE listed SMEs appear to use equity, it is important to note that capital is an important driver of SMEs performance and success. This observation concurs with Chittithaworn et al. (2011), Kemayel (2015), Philip (2011), and Al-Tit et al. (2019), who noted that financial resources are an important determinant of SMEs' success. Small businesses intending to list should consider the JSE main board rather than AltX, as the market views JSE small businesses more positively than those on the AltX. Our assessment differs from those of Mentegari and Nawar (2016), who noted that AIM is a better entry point into the capital market for SMEs than listing directly on the main market. It could be that this research was done in the developed country.

Furthermore, the findings show conclusively that stock market factors and company characteristics have a significant impact on the growth, operational performance, and market performance of small businesses listed on the JSE and AltX, as well as the difference in how businesses in these markets are impacted. As a result, the null hypothesis has been rejected, and the alternative hypothesis that:

- The JSE and AltX has a long-term relationship with the growth and performance of listed small businesses.
- The health of SA stock market has an impact on the health of listed small businesses.
- The JSE and AltX has a differential impact on listed small businesses

5.2.2 Conclusion

The primary aim of the study was to investigate if listing on the JSE and AltX has an impact on the growth and performance of listed SMEs. To examine this relationship, we used revenue growth as a proxy for growth, EPS as a proxy for operating performance and share price as a proxy for market performance. Our independent variables were firm characteristics (age, size, leverage, dual listing, and industry) and stock market indicators (market liquidity, stock market size, volume, capital raised, and IPO ratio). GDP growth was included as a control variable. The data for these variables from 2007 to 2020 were collected from reputable sources.

The empirical findings suggests that selected firms' characteristics and market indicators have a significant impact on the growth and performance of listed SMEs. Leverage increases the growth of AltX companies, while the industrials industry has a negative impact. On contrary, we found leverage to have a negative effect on the growth of JSE-listed small businesses. Furthermore, liquidity influences JSE SMEs growth positively. The results for AltX SMEs' operating performance show that firm size, industries such as Industrials, and Technology positively affects EPS, whereas dual listing and capital raised negatively affects EPS. Firm size, consumer service industry, and capital raised have a significant positive effect on EPS for JSE listed small firms, whereas healthcare industry and age have a negative impact.

Finally, market performance results show that industries such as financials, industrials, technology, and telecommunications industries and firm size all have a significant positive impact on AltX listed firms share price, whereas age and dual listing have a negative impact. We also found that firm size, leverage, IPO ratio, and industries such as consumer services and industrials impact the share price of JSE-listed small businesses positively, whereas age impact it negatively.

These findings confirm that the JSE and AltX have a long-term relationship with the growth and performance of listed small businesses. Company specific characteristics also play an important role in the long performance of listed companies. There are some similarities and differences in how SMEs on AltX and JSE are affected. In addition, the health of the stock market influences the performance of listed small businesses. Stock exchange liquidity, IPO ratio and capital raised influences the growth and performance of listed small businesses.

5.2.3 Further research

This study only looked at listed firms' stock exchange factors and risk measures denoted by leverage, excluding small businesses' qualitative characteristics such as management characteristics, management know-how, corporate governance, marketing strategy, and market share etc. The impact of these factors on the growth and performance of publicly traded companies is inevitable. Further research can be conducted to include these qualitative measures.

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