

**Employing the theory of planned behaviour to
determine pharmacists' entrepreneurial intentions in
South Africa**

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ABSTRACT

Pharmacy entrepreneurship has a role to play in addressing inequitable access to health and unemployment through the creation of new pharmacy ventures. Despite the regulatory changes of pharmacy ownership, which opened the market to laypeople rural areas and townships have remained with limited access to pharmaceutical services. A possible cause of this is the decline of creation of new independent community pharmacies which are traditionally known for their willingness to be established across demographics. In South Africa, little is known about employed pharmacists' intentions to transition from being employees to business owners who can potentially address the persistent inadequate pharmaceutical care service. Drawing on the Theory of Planned Behaviour, the study explores the influence of perceived environmental hostility on the entrepreneurial motivations and intentions of employed pharmacists in South Africa.

Primary data of the quantitative and cross-sectional study was collected using a self-administered questionnaire distributed electronically to pharmacists with online social media profiles. Four hundred forty-three pharmacists participated in this study, with the final sample consisting of 360 responses. Data analysis included correlational analysis, hierarchical multiple regression, and parallel mediation analysis.

The empirical findings of the study revealed that environmental hostility had an insignificant direct effect on entrepreneurial intentions. Instead, environmental hostility exerted a significant indirect effect on entrepreneurial intentions by negatively influencing the three motivational antecedents of entrepreneurial intentions in the model: Attitude towards behaviour, bootstrapping and perceived behavioural control.

The results support the findings of previous research that environmental influences such as hostility indirectly impact entrepreneurial intent by the mediating effects of the motivational antecedents. The study adds to the existing body of research that highlights the salient role individual and

environmental factors play in influencing the preconception phase of entrepreneurship, particularly in under-researched countries such as South Africa. Additionally, the study adds to the existing body of work on entrepreneurial intentions by incorporating a working adult population of health professionals, as most studies on entrepreneurial intentions have targeted students. The information gathered in this research helps inform policy on how to enhance the entrepreneurial participation of pharmacists under the broader context of increasing access to pharmaceutical services in South Africa.

Keywords: Entrepreneurial intentions, Pharmacy entrepreneurship, Environmental hostility, Attitude towards behaviour, Bootstrapping, Perceived behavioural control.

DECLARATION

I, Kudakwashe Sigauke, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Signed at

On the day of 2020

DEDICATION

I dedicate this research to my wife, Boikhutso Tsikane. Thank for your patience and inspiration to soldier on when the journey felt impossible to complete. To my loving family, Alec, Viola, Simba and Kudzi Sigauke, thank you for your endless emotional and financial support. Without your help, I would not be the man I am today.

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Lastly, to the pharmacists that contributed to the study, thank you for helping advance entrepreneurship research in our profession.

LIST OF ACRONYMS

ATB	Attitude towards behaviour
BP	Bootstrapping
DoH	Department of Health
DW	Durbin–Watson
EFA	Exploratory Factor Analysis
EH	Environmental Hostility
EI	Entrepreneurial Intentions
EIQ	Entrepreneurial Intentions Questionnaire
EM	Expectation-Maximisation
ESE	Entrepreneurial Self-Efficacy
GEM	Global Entrepreneurship Monitor
ICP	Independent Community Pharmacy
IEIS	Individual Entrepreneurial Intention Scale
IQR	Interquartile range
KMO	Kaiser-Meyer-Olkin
MCAR	Missing Completely at Random
MD	Mahalanobis Distance
MV	Multivariate
PAF	Principal Axis Factoring
PBC	Perceived Behavioural Control
SA	South Africa
SAPC	South African Pharmacy Council
SD	Standard deviations
SE	Self-Efficacy
SEE	Shapero's Entrepreneurial Event Model
SMME	Small Micro Medium Enterprise
SN	Subjective Norm
StatsSA	Statistics South Africa
TPB	Theory of Planned Behaviour
UHC	Universal Health Coverage
VIF	Variance inflation factor

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CHAPTER 1: INTRODUCTION

Quality health care in South Africa (SA) is vital to help improve lives and reduce poverty among its inhabitants (National Department of Health, 2016). The ability to access health services is impossible without access to pharmaceutical services (Buchan, Couper, Tangcharoensathien, Thepannya, Jaskiewicz, Perfilieva, & Dolea 2013). However, SA is plagued by inequitable access to pharmaceutical services which disproportionately affects the rural populace predominantly served by the public health sector (Ward, Sanders, Leng, & Pollock, 2014). In recognition of the gap in healthcare delivery, the study aims to explore the role entrepreneurship among pharmacists can play in improving access to pharmaceutical service. However, the topic of entrepreneurship is vast; therefore, the research focuses on examining the first step of the entrepreneurial process – entrepreneurial intent (Shook & Bratianu, 2010). Entrepreneurial intentions are the most significant precursor of behaviour, such as the creation of new pharmacy ventures necessary for expanding pharmaceutical services (Schlaegel & Koenig, 2014).

This study examined entrepreneurial intentions based on the theory of planned behaviour (TPB) (Ajzen 1991), which identifies individuals as the first order forces describing entrepreneurial activity (Davidsson, 2015). In the TPB model, the intention is determined by cognitive aspects of attitude towards the behaviour, subjective norms, and perceived behavioural control (Ajzen 1991). The three determinants are enough to predict intentions, but their explanatory power varies from one context to another (Schlaegel & Koenig, 2014). Attitude towards behaviour and perceived behavioural control have significant predictive capacity as determinants of entrepreneurial intentions (Schlaegel & Koenig, 2014). Subjective norms have demonstrated mixed results as a determinant of EI (Schlaegel & Koenig, 2014). Therefore, it is not strange to notice the exclusion or modification of subjective norms in some entrepreneurial intentions' models (Zhang & Cain, 2017). Close social networks as potential sources of new venture financing have been demonstrated, and Zhang & Cain (2017) found that bootstrapping finance potential from important referents as an

essential antecedent of entrepreneurial intentions. The study will, therefore, make use of the construct – bootstrapping – in place of subjective norms.

Entrepreneurship is the result of the interaction between enterprising individuals and their environment (Davidsson, 2015). A narrow focus on the individual alone without regarding the second-order element of entrepreneurship – environmental forces – may give an incomplete analysis of determinants of entrepreneurial intentions (Busenitz, Plummer, Klotz, Shahzad, & Rhoads, 2014). External environmental forces do not influence EI directly but are posited to influence intentions indirectly via mediating changes in the three determinants of EI (Ajzen, 1991). Environmental changes – regulatory, demographic, and technological – have been identified as sources of opportunities or hostility within the individual perceptual domain (Busenitz *et al.*, 2014).

Pharmaceutical service industry is highly regulated and has been subjected to regulatory changes aimed at improving access to medicine (Wessels & Luiz, 2003). The relaxing of entry barriers within the pharmaceutical service industry has presented entrepreneurial opportunities for innovative business models for new entrants and alert incumbents (Ward, Sanders, Leng, & Pollock, 2014). However, the regulatory changes may have increased competitive intensity and hostility of the industry towards incumbents, consequently influencing the start-up activity of new industry entrants (Urban, 2010).

Against this backdrop, this study aims to contextually situate the TPB framework within the pharmaceutical service industry and examine the potential effects of perceived environmental hostility on the formation of entrepreneurial intentions among pharmacists as mediated by the cognitive aspects of attitude towards behaviour, perceived behavioural control and bootstrapping.

1.1 Purpose of the study

The purpose of the research is to determine the degree to which the Theory of planned behaviour can be used to expound the entrepreneurial intentions of employed pharmacists in South Africa. Furthermore, the impact of perceived

environmental hostility on entrepreneurial intentions through an integrated model of TPB is determined.

1.2 Context of the study

Access to pharmaceutical services is recognised as a prerequisite for the achievement of universal health coverage (UHC) (Ward *et al.*, 2014). Since 1994, the government has made strides to improve access to pharmaceutical services with more than 80% of the population within reach of public primary health care clinics (Ward *et al.*, 2014). However, the administrative challenges at the public health facilities such as long waiting times hamper efficient service delivery (Ward *et al.*, 2014). The public health sector by itself is not able to handle the medicine-related needs of the people as many patients of the public health system purchase pharmaceutical products from private community pharmacies due to the limited medicine variety available and frequent stock-outs in public health facilities (National DoH, 2016). There has been a growing interest in entrepreneurship as a mechanism for improving access to pharmaceutical services since the inefficiencies of public health service delivery create entrepreneurial opportunities (Ward *et al.*, 2014).

To address pharmaceutical service delivery inefficiencies, the government increased private sector participation by amending the Pharmacy Act in 2003 to allow lay ownership of pharmacies (Pharmacy Act, 2003). Consequently, corporate businesses penetrated the pharmacy market through retail chains. However, liberalisation of pharmacy ownership has failed to improve access with corporates clustering in urban areas and independent community pharmacies closing, leaving rural areas to the service of public sector clinics (Ward *et al.*, 2014). The closure of independent community pharmacies is particularly worrisome since they traditionally operate in areas where there are no or few government facilities, complementing efforts to improve access to pharmaceutical services (Ward *et al.*, 2014). The closure of pharmacies not only discourages the pharmacy owner from future entrepreneurial activity but also provides a negative role model for would-be pharmacy entrepreneurs, consequently reducing their entrepreneurial intentions (Kibler, 2013).

Regulatory changes have been perceived to have created a hostile environment for independent community pharmacies as competitive intensity increased from new market entrants (Ward *et al.*, 2014). However, corporates have managed to create their entrepreneurial opportunities through business model innovations aimed at a low price and high-volume sales (Ward *et al.*, 2014). This dichotomy of environmental perceptions consequently influences the start-up activity of new pharmacy entrants.

Pharmaceutical service industry presents an exciting context to entrepreneurial intentions since pharmacists tend to face dichotomous career decisions: choosing between being self-employed in own pharmacy practice and being an employee in the public or private sector (Zhang & Cain, 2017). Entrepreneurial intention is thus influenced by the desirability and feasibility of both entrepreneurship and employment (Kolvereid, 1996). Teixeira and Forte (2017) noted that students in health sciences do not find self-employment appealing citing job security and stability of employment as significant motivating factors for their choice of a healthcare career. Within a context of dwindling independent pharmacy role models, pharmacists will tend to adopt a prevention focus when interpreting environmental changes to avoid and correctly identify false opportunities (Fitzsimmons & Douglas, 2011). According to Ward *et al.*, (2014, p. 486), increasingly "a pharmacy is no longer seen as an investment", and thus the bootstrapping financing potential from close social networks is curtailed. Pharmacists possess a critical skill that is in short supply in SA (National DoH, 2016) and thus have considerable high levels of job security in government or corporate pharmacy. Moreover, the security of tenure in public sector employment has been demonstrated to undermine the formation of EI (Kibler, 2013). Therefore, the extent to which job security serves as a hindrance of entrepreneurial intentions of pharmacists is worth exploring.

Although ownership of pharmacies has been liberalised to layman through regulatory changes, Bukonda, Chand, Disashi, Lumbala, & Mbiye (2012) demonstrated that most healthcare enterprises are created by individuals with ties to the health industry such as doctors, nurses and pharmacists. Therefore, examining pharmacy start-up intentions of employed pharmacists is a viable

avenue to help in understanding how access to pharmaceutical services can be expanded through entrepreneurial activity.

1.3 Problem statement

1.3.1 Main problem

Despite the regulatory changes of pharmacy ownership which opened the market to laypeople and corporates, increase in the number of community pharmacies has not kept pace with demographic changes in population growth (Antonie, *et al.*, 2017; Ward *et al.*, 2014). Rural areas and townships have remained with limited access to pharmaceutical services (Antonie *et al.*, 2017; Bigdeli *et al.*, 2013; Ward *et al.*, 2014). A possible cause of this is the decline of creation of new independent community pharmacies (ICPs) which have traditionally been known for their willingness to be established across demographics (Ward *et al.* 2014).

A study which investigates individual entrepreneurial intentions of employed pharmacists in SA by way of survey could help in understanding the perceptions of environmental changes that hamper the formation of EI needed to create innovative pharmacy start-ups necessary to improve access to pharmaceutical services.

Therefore, the main problem is stated as follows: To understand the influence the environmental hostility on entrepreneurial intentions of employed pharmacists in South Africa using the Theory of Planned Behaviour.

1.3.2 Sub-problems

The first sub-problem is to determine the extent of the direct relationship between EI and its cognitive determinants – attitudes towards behaviour, bootstrapping and perceived behavioural control – among employed pharmacists in South Africa.

The second sub-problem is to determine the extent of the direct relationship between perceived environmental hostility and EI among employed pharmacists of South Africa.

The third sub-problem is to examine the mediating effect of the motivational antecedents – attitude towards behaviour, bootstrapping and perceived behavioural control – on the relationship between perceived environmental hostility and EI among employed pharmacists of South Africa.

1.4 Significance of the study

The study is aimed at filling a gap in research on how environmental forces shape perceptions and intentions towards entrepreneurship, particularly in under-researched countries such as SA. By investigating both individual and environmental factors as antecedents of entrepreneurial intention, the study responds to Liñán, Urbano, and Guerrero (2011) who propose examining potential direct effects of the environment on entrepreneurial intentions.

Most studies on EI have been targeted at students, and there have been growing calls for extending EI research beyond student populations (Liñán & Fayolle, 2015). This study adds to the existing body of work on EI by incorporating a working adult population of health professionals. A singular focus on a specific industry improves consistency in results since the influence of environmental hostility operates under varying industry conditions.

The study will guide policymakers who need to consider environmental characteristics and antecedents of entrepreneurial intentions that favour the expansion of pharmacy services. A better understanding of pharmacists' level of EI has the potential to create jobs and consequently improve access to pharmaceutical services (Ward *et al.*, 2014).

1.5 Delimitations of the study

The study will focus on entrepreneurial intentions of employed pharmacists registered with the South African Pharmacy Council (SAPC). It excludes

pharmacist's assistants and other support personnel that work within a pharmacy irrespective of their registration with SAPC. The focus area is examining entrepreneurial intentions; therefore, pharmacists that are self-employed or involved in any entrepreneurial activity will be excluded.

1.6 Definition of terms

1.6.1 *Access to pharmaceutical services*

Access to pharmaceutical services refers to the geographical network of pharmacies and pharmacists (Bigdeli, 2013) assessed by using the indicator of the number of health care facilities – clinics and pharmacies – per 10000 residents at the district health level (Ward *et al.*, 2014).

1.6.2 *Entrepreneurial intention*

Entrepreneurial intention (EI) is defined as “self-acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future” (Thompson 2009:676). The TPB framework is predominantly used to examine EI formation (Schlaegel & Koenig, 2014).

1.6.3 *Attitude towards behaviour*

Attitude towards behaviour is the extent to which an individual has a positive or negative evaluation of performing the questioned action, such as starting a new pharmacy venture (Ajzen, 2002). A positive attitude towards venturing increases the desirability of self-employment and entrepreneurial activity (Schlaegel & Koenig, 2014).

1.6.4 *Perceived behavioural control*

Perceived behavioural control refers to the perceived ease or difficulty of performing a planned behaviour and the perception of individual control over the act in question (Ajzen, 2002). A high level of perceived control over venturing

strengthens a person's intention to start a new venture and increases their effort and perseverance when faced with setbacks (Schlaegel & Koenig, 2014).

1.6.5 Subjective norm – Bootstrapping potential

Subjective norm is the perceived consensus gentium from important referents such as friends, family, and mentors to demonstrate entrepreneurial behaviours such as starting a new pharmacy venture (Ajzen, 2002). The impact of social norms on EI has produced mixed results (Zhang & Cain, 2017). However, the social network of 3F's – family, friends, and fools – have been identified as relevant sources of patient capital during the bootstrapping phases of new ventures (Zhang & Cain, 2017). Therefore, examining subjective norms from the perspective of sources of financial and non-financial resources recognises that when important referents view entrepreneurship favourably, they are more likely to offer venture funding and support (Zhang & Cain, 2017).

1.6.6 External environment

External environment refers to the forces that influence a venture from outside the organisation (Urban, 2010). Material environmental changes have implications on perceptions of environmental uncertainty that signal opportunities and threats to venturing.

Environmental changes create opportunities for innovative thinking and the creation of new means to ends processes in the production of goods and services. However, industry-specific changes can be perceived as hostile when outcomes are seen as unfavourable, and the changes uncontrollable (Nabi & Liñán, 2013) influencing the development of entrepreneurial intentions.

Environmental hostility

Unfavourable environmental changes that threaten the survival of businesses are typically a consequence of institutional influences such as a change in legislative requirements (Torkkeli, Puumalainen, Saarenketo, & Kuivalainen, 2012). The laxing of entry requirements has increased competition intensity, in

a service industry where customer loyalty is not guaranteed. The study will examine perceptions of hostility within the pharmaceutical service sector.

1.7 Assumptions

- The study assumes that the sampled respondents answering the questions will be a fair representation of pharmacists located in SA.
- The pharmacists would be easily identifiable, and an adequate number of those contacted were willing to participate and had access to an internet-enabled device from which they could complete the survey.
- The respondents were sincere, genuine, and non-biased in their participation in the study without fear or interference from their employment organisation.
- The respondents were proficient in the survey language and comprehended and answered the questions to the best of their ability allowing the researcher to garner the best value from data derived from responses and evaluate the proposed hypotheses of the research study.
- Respondents had no expectations of receiving any remuneration or compensation in any form for participating in the study.
- The respondents were not offended by questions related to their entrepreneurial intentions, attitudes, and competency.
- Respondents had adequate time to complete the online survey without skipping any questions.
- The source scales used for this study would prove valid and reliable.
- The researcher had sufficient time to research within the time constraints expected for a masters' degree.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The literature review examines the theoretical framework for the study. Entrepreneurship will be discussed to situate the problem statement. Specifically, the antecedents of intention-based models will be discussed and how they will be used in measuring entrepreneurial intentions. The contextual embeddedness of the TPB model within the pharmaceutical services industry will then be elucidated.

2.2 Entrepreneurship

Entrepreneurship is defined based on its fundamental activity of new venture creation which involves individuals actively exploring and exploiting opportunities (Schlaegel & Koenig, 2014). Entrepreneurship in pharmacy has been identified as a critical determinant of pharmaceutical service innovations, consequently creating new opportunities for pharmacists (Odumosu, 2014; Khan, Ahmad, Fayyaz, Ashraf, & Bhagavathula, 2016; Huston, 2018). Most of the research is centred around pharmacy students recognising entrepreneurial orientation as an essential quality for creativity and innovation in serving the pharmaceutical needs of the community. The literature envisions a community pharmacist who develops and implements innovative pharmacy services for the community in the interests of improving public health (Mattingly, Mullins, Melendez, Boyden, & Eddington, 2019). Entrepreneurship in pharmacy can also be viewed from an intrapreneurship perspective, where entrepreneurial behaviours are embraced within an existing organisation (Hohmeier, 2016). Considering the proliferation of corporate pharmacies, it would be an underestimation of pharmacy entrepreneurship by looking at independent pharmacies alone.

Nonetheless, pharmacy entrepreneurship in the context of the study is interpreted as the creation of new pharmacist-led ventures by individuals

entering an existing market with new products and services to enhance access to pharmaceutical services (Odumosu, 2014; Venter & Urban, 2015). In the context of widening inequality gap in SA, the government recognises the role SMMEs, which include independently owned community pharmacies, can play in reducing service delivery incongruities such as access to pharmaceutical services (Streak & Urban, 2013). Promoting a culture of entrepreneurship among pharmacists is necessary to increase service innovations (Hilsenrath, Woelfel, Shek, & Ordanza, 2012) to meet the challenge of inequitable access to pharmaceutical services particularly in rural SA. Furthermore, entrepreneurial activity in pharmaceutical services has a favourable impact on economic development and job creation (Bosma & Kelley, 2018).

Individuals and opportunities are vital determinants explaining entrepreneurial activity (Urban, 2012). Previous research efforts of measuring the individual's personality and behavioural traits have largely failed to predict entrepreneurial activity (Gird & Bagraim, 2008). This has given credence to the cognitive approach of understanding the individual's attitudes, beliefs, and intentions as significant predictors of entrepreneurial activity (Krueger *et al.*, 2000). Entrepreneurial activity involves human agency, whereby an agent acts intentionally to shape one's trajectory (Bandura, 2001). All new commercial opportunities, regardless of whether they are discovered or created, are exploited through the creation of new ventures within or outside of existing organisations (Kloepfer & Castrogiovanni, 2018). The creation of a new venture is purposive involving deliberate planning and envisioning on the part of the individual making entrepreneurship an intentional, planned behaviour preceded by entrepreneurial intentions (Krueger *et al.*, 2000). Establishment of new pharmacy ventures is therefore dependent on the entrepreneurial intentions of pharmacists, as it has been noted that most healthcare enterprises are created by individuals with ties to the health industry (Buchan *et al.*, 2013).

2.3 Entrepreneurial intentions

Entrepreneurial intentions are fundamental to comprehending entrepreneurship as they are the first step of an evolving long-term process of discovering,

creating, and exploiting opportunities (Schlaegel & Koenig, 2014). Intentions capture the motivations which influence behaviour, and the consequent effort one plans to exert to fulfil the planned behaviour (Krueger *et al.*, 2000). An increase in the intention to actualise a given behaviour corresponds to an increase in the likelihood of such behaviour being fully implemented.

Entrepreneurial intent is an acceptable proxy for determining the commitment to starting a new venture (Schlaegel & Koenig, 2014). Whether or not an individual has entrepreneurial intentions is not a matter of a dichotomous question of yes or no, but a measure of degree, ranging from zero to a steadfast firmly held belief of creating a business venture (Thompson, 2009). A scale which encapsulates the extent and magnitude of individuals' entrepreneurial intent is the individual entrepreneurial intent scale (Thompson, 2009).

There are proactive, risk-taking pharmacists who intend on developing innovative pharmaceutical care services and products within existing organisational settings who would expectedly exhibit measurable levels of entrepreneurial intent (Hohmeier, 2016). Employee pharmacists working in established organisations with entrepreneurship as the dominant logic have incentives to translate their entrepreneurial intent into intrapreneurial behaviour (Venter & Urban, 2015). Such corporate entrepreneurial environments would deter employee pharmacists with entrepreneurial intent from self-employment pursuits (Kolvereid, 1996; Venter & Urban, 2015). However, the study contextualises entrepreneurial intentions as self-employment intent to establish new pharmacist-led ventures outside of existing organisations (Odumosu, 2014; Venter & Urban, 2015). Therefore, the study operationalises EI at the individual level and not at the organisational level.

The theoretical approach to entrepreneurial intentions is based on two strikingly compatible models of individual behaviour: Ajzen's (1991) Theory of Planned Behaviour (TPB) and Shapero's (1982) Model of Entrepreneurial Event (SEE) which recognise that to encourage new venture creation it is vital to increase favourable behavioural beliefs of feasibility and desirability towards pursuing identified opportunities (Fitzsimmons & Douglas, 2011).

According to the SEE, entrepreneurial intention depends on perceived desirability, the propensity to act, and perceived feasibility. Perception of desirability refers to the individual appeal of creating a venture which incorporates personal preferences for entrepreneurial activity (Shapero & Sokol, 1982). Perception of feasibility refers to the extent to which one feels personally competent in creating a new enterprise (Bandura, 2001), where attitudes are linked to expected gains from results of behaviour (Shapero & Sokol, 1982). Propensity to act is the predisposition to act on one's decisions primarily operationalised around an individual's locus of control (Shapero & Sokol, 1982).

These models have high predictive power of explaining entrepreneurial behaviour. When the two models are compared, they overlap considerably with some researchers interchanging SEE's perceived feasibility with TPB's perceived behavioural control (Krueger *et al.*, 2000). Schlaegel & Koenig (2014) compared the two models and found a more significant effect size with SEE but TPB having a higher predictive power in explaining variance in entrepreneurial intentions. Furthermore, TPB has been extensively used in previous research efforts and has been demonstrated to be applicable across cultures proving its versatility and sufficiency as a predictor of EI. The TPB framework is therefore used in the study because of its higher predictive power and its dominance in literature.

The TPB model has been applied in the South African context in prior research efforts. In their seminal work on EI in South Africa, Gird & Bagraim (2008) demonstrated the sufficiency of the TPB in predicting EI of final year commerce students. In a recent study, Urban & Chantson (2019) found moderately high levels EI amongst research scientists and engineers using TPB. What emerges from longitudinal studies is that the level of EI in SA is consistently low – 11,7% as of 2017 – in comparison to its peers in African and efficiency-driven economies (Bosma & Kelley, 2018). Within the context of pharmacy entrepreneurship, EI among pharmacy students (Khan, Ahmad, Fayyaz, Ashraf, & Bhagavathula, 2016; Huston, 2018) and practising pharmacists (Odumosu, 2014) is low. As a precursor to actualised entrepreneurial activity, the low levels of EI are worrisome, particularly in a South African economy characterised by

skyrocketing unemployment levels, stagnant economic development (Stats SA, 2019) and worsening maldistribution of pharmaceutical services (Ward, Sanders, Leng, & Pollock, 2014). Against this backdrop, it is pertinent to understand the determinants of EI to understand entrepreneurial efforts necessary to create jobs and increase access to pharmaceutical services across SA. The determinants of EI in TPB are discussed further in the hypotheses.

2.4 Motivational determinants of entrepreneurial intent

Using an adaptation of TPB, the study posits that EI is predicted by an attitude towards behaviour (ATB), bootstrapping (BP) and perceived behavioural control (PBC). The direction, strength, and significance of direct relationships between EI and its cognitive determinants vary across populations and contexts (Ajzen, 2002). The discussion below elucidates the relative importance of the determinants among employed pharmacists in SA.

2.4.1 Attitude towards behaviour (ATB)

Attitude towards behaviour refers to the favourable or unfavourable appraisal of a planned behaviour (Schlaegel & Koenig, 2014). In the context of entrepreneurship, ATB is shaped by behavioural beliefs regarding the positive or negative valence associated with the expected outcome of engaging in entrepreneurial activity. ATB is closely associated with the construct, perceived desirability which appears in the SEE. Previous research efforts have substituted ATB with perceived desirability with some proposing that evaluating an aggregate of specific desirable traits associated with new venture creation is an appropriate proxy for determining ATB (Shook & Bratianu, 2010).

Within pharmacy entrepreneurship research, Khan *et al.*, (2016) found poor attitudes towards business ownership amongst pharmacy students in Pakistan. This is consistent with previous research efforts that have demonstrated that attitude towards self-employment is weighed against the attractiveness of

security inherent in paid employment in the decision-making process of pursuing entrepreneurship (Teixeira & Forte, 2017).

The level of ATB as measured by the GEM report indicator of "entrepreneurship is a good career choice," is consistently high in SA exceeding standards in peer African economies (Singer, Herrington, & Menipaz, 2018). The extensive media coverage and profiling of prominent entrepreneurs in SA is touted as the primary contributor to heightened attitudes towards entrepreneurship (Herrington & Kew, 2018).

The role of attitudes in predicting behaviour has been demonstrated using intention as a mediator between attitudes and behaviour (Bagozzi, Baumgartner, & Yi, 1989). The salience of ATB as a predictor of EI has been consequently demonstrated empirically in further research efforts (Liñán & Fayolle, 2015; Donaldson, 2019). In the SA context, ATB is the most influential predictor of EI (Gird & Bagraim, 2008; Malebana, 2014; Urban & Chantson, 2019). This contrasts with seminal work of Krueger *et al.*, (2000) which posits that ATB and subjective norms play a secondary role to the primacy of PBC as a predictor of EI. The similarities across SA literature may reflect the similarities in the cultural context. It is therefore expected that ATB will be the strongest predictor of EI.

A synopsis of the literature shows that the more positive the attitude towards venturing, the more favourable the intention of starting a new venture (Shook & Bratianu, 2010).

2.4.2 Bootstrapping (BP)

According to TPB, subjective norms – the perceived level of approval and support – from influential people in one's social network influence the intention to perform a planned behaviour, such as entrepreneurship (Schlaegel & Koenig, 2014). The perceived level of support stems from normative beliefs on whether the behaviour is valued and legitimised or associated with criminality and corruption in society (Urban, 2016). Empirical evidence on the influence of subjective norms as a determinant of EI has been weak with some arguing that

the effects of subjective norms on EI are mediated by perceived feasibility and attitudes towards venturing (Liñán & Chen, 2009).

Nonetheless, prior research efforts have demonstrated that social legitimacy assigned to entrepreneurship by one's close environment influences the entrepreneurial decision-making process (Santos, Roomi, & Liñán, 2016). Moreover, the social legitimacy attached to entrepreneurship aligns with the potential of receiving financial and non-financial support from social networks (Zhang & Cain, 2017). Therefore, examining subjective norms from the perspective of sources of informal financial resources recognises that when important referents view entrepreneurship favourably, they are more likely to offer venture funding and support (Zhang & Cain, 2017).

Business start-ups typically suffer from liability of newness which affects their ability to access traditional long-term external financing ideally suited to starting capital intensive ventures such as a pharmacy business (Carter & Van Auken, 2005). Entrepreneurship theory indicates that the acquisition of resources is indispensable to the process of new venture creation and potential entrepreneurs are usually undercapitalised to finance a new venture fully by themselves (Kloepfer & Castrogiovanni, 2018). Many start-up businesses grapple with the difficulties of capital acquisition by relying on bootstrapping and informal investments as an alternative to formal financing methods (Carter & Van Auken, 2005). Access to finance had been cited as a pivotal inhibitor to entrepreneurship in SA (Herrington & Kew, 2018). Therefore, informal investment is a crucial component of early-stage ventures whose smaller size and higher risk are not palatable to formal financing institutions and venture capital. Importantly, informal investors are the principal source of external financial support contributing five times more than formal investors in monetary value towards start-ups and growing businesses (Maula, Autio, & Arenius, 2005). Without informal investment, many new ventures would wither before they are large enough to attract the attention of institutional investors. Furthermore, individuals at the early stage of venture who pursue formal external financing have been shown to spend inordinate amounts of time cultivating relationship with investors for funding that is unlikely to be secured

(Birtch, Au, Chiang, & Hofman, 2018). Instead, individuals who utilise bootstrapping financing methods are intentional in their lean start-up methods as they tend to direct their efforts to sales accelerating their time-to-market (Carter & van Auken, 2005).

The social network of 3F's – family, friends and foolhardy investors – have been identified as essential sources of bootstrapping finance that recognise trust as an asset for social exchange during the early stages of new venture creation (Sieger & Minola, 2017). However, previous family entrepreneurship literature has found insignificant evidence of a positive relationship between family financial support and entrepreneurship. Reciprocity expectations embedded in the potential provision of family support have been shown to impede the intergenerational transmission of EI (Sieger & Minola, 2017). Furthermore, founders avoid using bootstrapping finance methods such as borrowing from other firms as this may inadvertently require some form of reciprocity (Carter & van Auken, 2005).

Nonetheless, financial support from family, friends and neighbours has been demonstrated to contribute over 70% of the start-up capital necessary to overcome resource constraints that are critical to the survival of new ventures in 29 countries (Maula, Autio, & Arenius, 2005). High normative legitimacy of entrepreneurship increases the potential of raising patient capital from one's social network, particularly at the family level. The typical family outlook that glorifies professionals plying their trade as employees and perceives them as more successful than entrepreneurs negatively influences the perceived likelihood of acquiring finance through bootstrapping; consequently, lowering entrepreneurial intentions (Mwatsika, 2015).

2.4.3 *Perceived Behavioural Control (PBC)*

PBC refers to an individual's beliefs in their ability to control and execute a given behaviour. PBC stems from control beliefs relating to the perceived presence of enabling or impeding factors that may impact the performance of the behaviour in question (Liñán & Chen, 2009). In the entrepreneurship literature, PBC is aligned with perceived self-efficacy (Bandura, 2001), which in turn aligns with

perceived feasibility (Shapero & Sokol, 1982) as they all refer to perceived capabilities. In some studies, PBC has been replaced with self-efficacy in the context of entrepreneurship, namely entrepreneurial self-efficacy (ESE) defined as an individual's belief in their ability to create a new venture successfully (McGee, Peterson, Mueller, & Sequeira, 2009). High self-efficacy for a planned action leads to individuals setting lofty achievement goals and persevering when faced with challenges. In the context of TPB, Ajzen (2002) contends that PBC is a higher-order construct composed of two separate components self-efficacy (internal control) and controllability (external control). To the extent that the behaviour is under volitional control, PBC exerts a direct influence on the behaviour question. This makes PBC a unique contributor in TPB as it predicts behaviour directly and indirectly through intentions. McGee (2009) found ESE to be a direct predictor of nascent entrepreneurial behaviour, demonstrating the immediate effects of ESE on behaviour. In a developing world context, the ESE-EI-behaviour link was shown as ESE was found to be a significant predictor of both EI and nascent entrepreneurial behaviour amongst Zambian students (Mwiya, Wang, Kaulungombe, & Kayekesi, 2019)

The PBC levels in South Africa, captured by the GEM report indicator – perceived capabilities – are relatively low in comparison to its peers in African and efficiency-driven economies (Herrington & Kew, 2018). The low levels of PBC correspond with low EI levels giving credence to PBC as the most influential predictor of EI. Previous research efforts have found PBC to be decisive in planned action (Gird & Bagraim, 2008). Individuals are unlikely to perform a behaviour if they have low levels of PBC even if their social pressures and attitudes have a favourable appraisal of the behaviour. Davidsson (1995) found perceived desirability to exert its effects on EI indirectly through the mediating effects of entrepreneurial conviction – a construct closely related to PBC – further supporting the supremacy of PBC. In pharmacy entrepreneurship, Odumuso, (2014) found the ESE dimensions of marketing and networking to be significant predictors of EI amongst professional pharmacists. PBC can be enhanced through education and training, thus offering a unique opportunity to improve EI and consequently, entrepreneurial activity (Teixeira & Forte, 2017). However, within the context of SA literature on

EI presents ATB to be a more influential predictor of EI than PBC (Urban & Chantson, 2019). This is in line with the theory as the relative importance of the determinants in predicting EI is posited to vary across contexts and behaviours (Ajzen, 2002).

A synopsis of the works of the literature shows that a high level of perceived control over venturing strengthens a person's intention to start a new venture and increases their effort and perseverance when faced with setbacks (Schlaegel & Koenig, 2014). This is paramount in the nascent stages of a new venture when initiative and commitment are required to overcome the liabilities of newness and smallness (Urban, 2012).

2.4.4 Hypothesis 1

In line with the synopsis of prior studies, Hypothesis 1 states that the EI of employed pharmacists in SA is positively related to ATB (*H1a*), BP (*H1b*) and PBC (*H1c*).

2.5 Environmental determinant of entrepreneurial intent

Entrepreneurship is the result of the interaction between enterprising individuals and their external environment (Davidsson, 2015). A narrow focus on the individual alone without regarding the second-order element of entrepreneurship – environmental forces – may give an incomplete analysis of "why entrepreneurs act" (Busenitz, Plummer, Klotz, Shahzad, & Rhoads, 2014). External environment refers to the forces that influence a venture from outside the organisation (Urban, 2010). Material environmental changes have implications on perceptions of environmental uncertainty that signal opportunities and threats to venturing (Nabi & Liñán, 2013). External environmental factors are particularly pertinent to ventures in their early stages because they are usually more vulnerable to external influences than established firms within a dynamic environment. External environmental factors can be categorised into two dimensions of dynamism and hostility (Urban,

2010). The two dimensions have been explored in prior research building on the theory of the environment.

In the context of the SA entrepreneurial environment, GEM reports indicate that the environment is hostile to entrepreneurial activity characterised by limited resources, high uncertainty, and stiff competition (Herrington & Kew, 2018). In consideration of the interdependency between an agent and the environment, it is pertinent to understand the role played by the hostile environment in influencing entrepreneurial intentions. The second sub-problem is therefore to determine the extent of the direct relationship between perceived environmental hostility and EI among employed pharmacists of South Africa.

2.5.1 *Environmental hostility (EH)*

Environmental hostility refers to an unfavourable business climate characterised by strict regulation and intense competition for resources and market opportunities (Urban, 2010). Environmental hostility plays a critical role in small firm viability and the strategic decisions they pursue growth. However, findings on the effects of EH on entrepreneurship are limited and mixed. On the one hand, hostile environments, as a result of aggressive competition, have been linked to increased entrepreneurial activity and business innovations (Urban, 2010).

On the other hand, EH has been associated with high barriers to entry with less room for radical innovation-based differentiation (Kibler, 2013). SMMEs have a substantial disproportionate contribution to radical innovations which are critical to long-term economic growth (Baumol, 2005). Therefore, an environment hostile to the entry of SMMEs will invariably discourage innovation and entrepreneurship crucial to sustainable wealth creation. Consequently, the study evaluates EH as a perceived threat to entrepreneurial activity. A hostile environment discourages entrepreneurship as the perception of barriers and potential losses due to entrepreneurial activity adversely impact EI. Perceived barriers to entrepreneurial activity have been demonstrated to have a direct negative predictive effect on EI irrespective of positive attitudes towards venturing amongst engineering students (Lüthje & Franke, 2003). The study is

contextualised within a specific industry; thus, it is necessary to explore the industry-specific hostilities and their potential influence on the EI of employed pharmacists.

The pharmaceutical industry has experienced several regulatory changes aimed at improving access to pharmaceutical services such as allowing lay ownership of pharmacies (Ward *et al.*, 2014). The entry of corporations into the business of pharmacy has threatened the survival and profitability of ICPs. Corporate pharmacy has introduced intense business competition with the two largest retailers in the country having a combined community pharmacy footprint of (*circa*) 20% but enjoying a market share of over 50% (The Helen Suzman Foundation, 2017)

The price of medicines in the private sector is strictly regulated through the implementation of Single Exit Pricing mechanism, which effectively discards discounts and ensures transparent pricing of medicine (Ward *et al.*, 2014). Gross profits generated from discounts in wholesaling were effectively cut. ICPs are under pressure because of regulated pricing, and without economies of scale, they cannot compete on price. Moreover, ICPs are barred from forming joint purchasing agreements with manufacturers and wholesalers since this is considered an illegal act of price-fixing (The Helen Suzman Foundation, 2016). The restriction does not apply to corporate pharmacies allowing them to purchase unregulated products at scale to sell it at lower prices.

Corporate pharmacies have been permitted to participate in backward supply chain vertical integration (The Helen Suzman Foundation, 2016). This has enabled them to compete within a highly regulated end to end medicine supply chain environment which allows them to sell medicines well below the regulated maximum price relying on high-volume sales (Ward *et al.*, 2014). Furthermore, corporate businesses are permitted to have pharmacies within stores and thus can depend on non-medicinal product sales to compensate for low-profit margins from medicine sales.

Medical aids have tremendous buying power in terms of the allocation of spending by their members. They have used their buying power to bargain for

low dispensing fees in exchange for patronage of their members to pharmacies regarded as designated service providers (Wessels & Luiz, 2003). Corporates due to their economies of scale can negotiate favourable terms with medical aids allowing them to be designated service providers. This has threatened customer loyalty for ICPs since customers are in effect "forced" to receive pharmaceutical care services at designated service providers, which tend to be corporate pharmacies.

The proliferation of the internet and seamless communication services has resulted in the shifting of customer purchasing patterns as they shop online instead of being a patron of a traditional brick and mortar pharmacy (Wessels & Luiz, 2003). The fear of competing with incumbents coupled with the dismal survival rate of SMME's in SA, as considerations of the environment would negatively influence the EI of pharmacists.

2.5.2 Hypothesis 2

In line with the synopsis of prior studies, Hypothesis 2 states that the EI of employed pharmacists in South Africa is inversely related to EH.

2.6 Motivational determinants as mediators of environmental hostility

External variables have been demonstrated to improve the predictive validity of TPB intention models (Liñán, Urbano, & Guerrero, 2011). Therefore, incorporating environmental hostility within the TPB model can further enhance the validity of the model, particularly within a highly regulated industry such as pharmacy. However, Ajzen (2002) contends that the TPB model is sufficient in predicting EI. External variables do not directly influence EI but instead indirectly impact EI through the mediating effects of the motivational antecedents. Incorporating EH into the model helps in appreciating the environment as a predictor of not only EI but also its motivational antecedents – ATB, BP and PBC – in turn improving understanding of EI. In a study that found statistically significant covariances between risk perception and business

context, Nabi and Liñán, (2013) found a perceived hostile environment to have a negative influence on ATB and PBC but not on EI. Environmental hostility undermines an entrepreneurship-friendly environment that encourages trial-and-error and tolerates failure and in turn, influences motivations for entrepreneurship (Kibler, 2013).

2.6.1 Mediating effect of ATB on EI

ATB is determined by an individual's positive or negative appraisal of the outcomes of entrepreneurial behaviour. Perception of environmental hostility constrain a favourable view of entrepreneurship, as expectations of achieving results valued by an individual engaging in planned ventures are lowered (Zhang & Cain, 2017). The lowered expectancy and valence of entrepreneurial activity and heightened perceived cost of failure adversely influence ATB, which in turn reduce EI. Therefore, perceived environmental hostility is expected to negatively impact ATB, which in turn reduces EI, albeit ATB's positive effect on EI.

2.6.2 Mediating effect of BP on EI

The perception of potential bootstrapping from important referents is shaped by the level of support and approval of entrepreneurial activity. However, in a hostile environment, the level of support may wane because of the increasing perception of threats in the environment (Zhang & Cain, 2017). Perception of threats reflects low confidence and negative expectations about the industry, which would be associated with lower propensity to provide support. On the contrary, some studies show that support provided by a network of strong ties such as close family members may be reactively driven by altruistic reasons and affective needs of the family regardless of the business case (Maula, Autio, & Arenius, 2005). Nonetheless, in the study, we expect a high perception of EH to negatively affect BP, which in turn, lowers EI.

2.6.3 Mediating effect of PBC on EI

EH influences the direct and indirect impact of PBC on entrepreneurial activity through EI due to EH's inherent ability to brood perceptions of threats and fear of failure in individuals. Fear of failure has been found to generate a bias towards planning and analysis, which potentially lowers EI and increases the transition time of intent into actual entrepreneurial activity (Nabi & Liñán, 2013). Perception of threats creates anxiety which reduces self-efficacy, locus of control and opportunity recognition. In previous studies, individuals with high ESE levels perceive fewer threats in the environment because of their self-confidence in their ability to influence one's environment through one's means and iterate based on the response from the environment (Urban, 2010). This suggests that in a hostile environment, pharmacists have lower perceptions of feasibility and PBC, which lowers the probability of pharmacists launching their new ventures.

2.6.4 Hypothesis 3

In line with the synopsis of prior studies, Hypothesis 3 states that the relationship between environmental hostility and entrepreneurial intentions of employed pharmacists in South Africa is positively mediated by their ATB (H3a), BP (H3b) and PBC (H3c).

2.7 Influence of Demographic Variables

Previous studies have determined gender and age to be significant in predicting the commitment to creating a new venture (Laviolette, Rabu Lefebvre, & Brunel, 2012; Santos, Roomi, & Liñán, 2016). Entrepreneurial activity is gender-biased towards men as they tend to have a more positive attitude towards venturing and a consequent higher entrepreneurial intent (Liñán, Urbano, & Guerrero, 2011). Individuals within the age group between 25- and 44-years account for a disproportionate share of nascent entrepreneurship (Bosma & Kelley, 2018). Public-sector employees have been identified as non-entrepreneurial types exhibiting meagre transition rates to entrepreneurship (Kibler, 2013).

The way an individual perceives an environment affects their entrepreneurial intent. Family members with businesses have been demonstrated to serve as role models for potential entrepreneurs, consequently having a direct effect on entrepreneurial intentions (Laviolette, Rabu Lefebvre, & Brunel, 2012). The probability of favourably assessing the environment increases if the individual has prior information through experience. Pharmacists, in their early careers with little work experience, may not have accrued the capital, credibility and networks of older pharmacists, constraining the development of entrepreneurial intent (Bosma & Kelley, 2018).

Prior business experience has been demonstrated to enhance the accuracy of forecasts and reduce the degree of uncertainty associating with venture creation even if the individual failed in the previous venture (Schenkel, D'Souza, & Braun, 2014). Failure can be one of the most compelling learning experiences that an entrepreneur needs for future success.

Thus, gender, age, public-sector employment, work experience, family history of business and previous business experiences were used as control variables to control for their influence on entrepreneurial intentions of pharmacists.

2.8 Conclusion of Literature Review

Insight into EI is pertinent to prospecting future entrepreneurial activity and possible improvement of access to pharmaceutical services. The theoretical model of EI, TPB, is robust. However, modifications of the motivational constructs such as subjective norms and addition of environmental variables have been advocated to improve the sufficiency and predictive validity of TPB (Zhang & Cain, 2017). Empirical studies employing the TPB have validated its applicability in entrepreneurship research. However, only a few studies were directed towards working adults, particularly in the pharmaceutical service industry. The three motivational antecedents of EI in the modified TPB framework were introduced. Environmental hostility was discussed on how it potentially, directly, and indirectly, influences EI. Relevant demographic and

situational variables that have been demonstrated to influence on EI were considered to control for their effects in the study.

Based on the literature review, hypotheses were formulated and are presented in Figure 1, displaying the relationships of the variables. Below is a summary of the hypotheses.

2.8.1 Hypothesis 1:

The entrepreneurial intentions of employed pharmacists in South Africa are positively related to their attitude towards behaviour (*H1a*), bootstrapping (*H1b*) and perceived behavioural control (*H1c*).

2.8.2 Hypothesis 2:

The entrepreneurial intentions of employed pharmacists in South Africa are inversely related to perceived environmental hostility.

2.8.3 Hypothesis 3:

The relationship between environmental hostility and entrepreneurial intentions of employed pharmacists in South Africa is positively mediated by their attitude towards behaviour (*H3a*), bootstrapping (*H3b*) and perceived behavioural control (*H3c*).

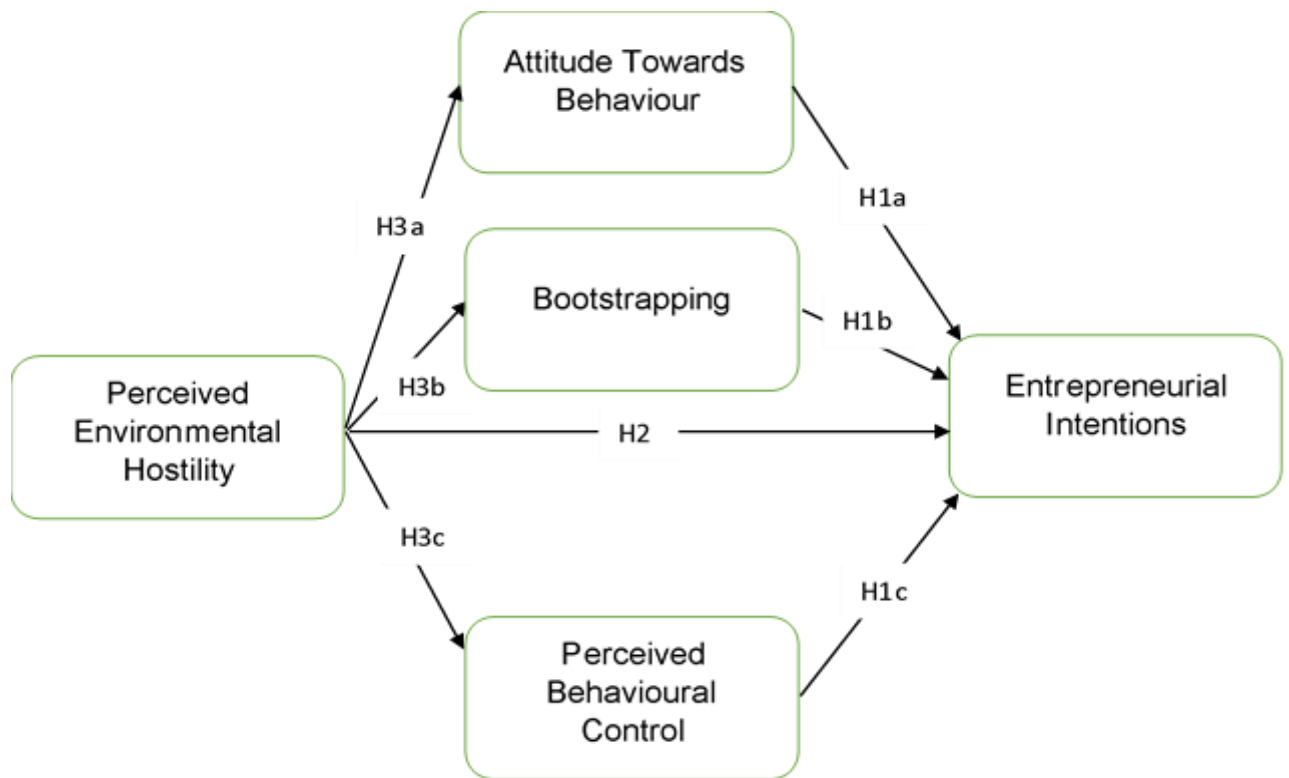


Figure 1. Conceptual framework of integrated entrepreneurial intentions model

Source: The researcher's own model developed based on the literature reviewed (Schlaegel & Koenig, 2014; Thompson, 2009; Liñán & Chen, 2009; Zhang & Cain, 2017; Urban, 2010)

CHAPTER 3: RESEARCH METHODOLOGY

This chapter describes the research paradigm and design, the population and sample, the research instrument, and data collection and analysis techniques to address the research questions. A consideration of the limitations of the study, validity and reliability of the research design is then presented.

3.1 Research methodology /paradigm

The research is based on a post-positivistic paradigm which is congruent with quantitative analysis. A quantitative and correlational approach was used because it allows quantification of constructs with scales and relationships between constructs as well as strength of such relationships can be tested to accept or reject hypotheses (Schindler, 2019). The quantitative method has been adopted in previous empirical research on entrepreneurial intentions and has been shown that it can be generalised (Liñán *et al.*, 2011). However, the quantitative method does not allow for the collection of descriptive data that can be collected through qualitative methods such as in-depth interviews which can explain the relationships between constructs (Schindler, 2019).

Descriptive statistics were used to analyse entrepreneurial intentions and its associated determinants among pharmacists. Correlational and regression statistics were used to determine the relationship between entrepreneurial intentions (EI), and its antecedents – individual and environmental factors.

3.2 Research Design

The methodological approach for the research study is a cross-sectional survey using questionnaires to collect primary data from pharmacists. A cross-sectional study is quick and thus allows the collection of data in a short space of time, especially when writing a dissertation in 6 months (Schindler, 2019). However, a cross-sectional study restricts cause and effect deductions to be concluded, which can be afforded in a longitudinal study (Schindler, 2019).

3.3 Population and sample

3.3.1 Population

The target population for the research study comprises employed pharmacists that are registered with the South African Pharmacy Council (SAPC) but are not self-employed. According to the SAPC public database, there are over 16000 registered pharmacists (South African Pharmacy Council, 2020). Surveying the entire pharmacist population is impractical; therefore, the study adopted a sampling frame. The population parameter of interest is the level of entrepreneurial intentions among employed pharmacists. However, there is no database available detailing the number of employed vs self-employed and unemployed pharmacists. Therefore, the research questionnaire included an exclusionary question 2 (Appendix A) to allow self-identification of employed pharmacists.

3.3.2 Sample and sampling method

The study used probability random sampling for a sample of pharmacists registered by the South African Pharmacy Council (SAPC), a statutory body that regulates pharmacy practice in SA. Probability sampling allows for generalisation of the study and statistical inferences to determine entrepreneurial intentions of pharmacists in SA (Schindler, 2019). Electronic-based surveys have the advantage of convenience for the researcher. However, online surveys limit capabilities to conduct simple random sampling since email contacts are required to send the invitations to pharmacists (Schindler, 2019).

In the interests of expediency, the study drew a sampling frame from online groups of pharmacy personnel such as PharmacySA® comprising of approximately 9600 potential respondents with readily available email addresses. The individuals in the pharmacy discussion groups were verified as pharmacists using the SAPC database. LinkedIn® was invaluable as it allowed the selection of individuals based on profession and location of practice. The

emailing lists derived from Facebook® and LinkedIn® pharmacy discussion groups became the de facto sampling frame, from which the study drew a sample. The use of email address sampling frames limits the population of inference (Schindler, 2019).

The specific number of pharmacists who received the questionnaires, cannot be stated with an acceptable level of confidence because it was mostly administered through unsolicited emails and on open platforms like Facebook®. However, approximately 1000 questionnaires were sent out directly to LinkedIn® and Facebook® contacts. A total of 443 responses were received, which is about a 44% response rate. Previous research amongst pharmacists recorded a response rate of about 42% (Odumosu, 2014) and was therefore similar for the current study. An analysis of the responses showed that 44 cases were incomplete, having an excess of 10% missing responses and consequently excluded. All the pharmacists had to meet the criteria of not being self-employed, and question 2 of the questionnaire inadvertently disqualified 39 respondents for meeting the exclusion criteria. Therefore, the analysis used a viable sample size of 360 respondents.

Considering that multivariate statistical techniques were used; it was necessary to establish the minimum sample size required for these analytical procedures. The common rule of thumb varies from 5 to 20 observations per predictor variable, and overall, 300 is a good sample size for any analysis (Field, 2013). This study managed to get a sample size of 360 and thus met the minimum requirements.

3.4 The research instruments

The survey instrument is a self-rating online questionnaire consisting of instruments adapted from literature to give a hybrid instrument of cognitive determinants of entrepreneurial intent and environmental hostility.

- Thompson's (2009) Individual Entrepreneurial Intent Scale (IEIS),
- Liñán & Chen's (2009) Entrepreneurial Intent Questionnaire (EIQ),

- Zhang & Cain's (2017) bootstrapping scale
- Environmental hostility scale adapted from Urban (2010).

The actual instrument used is affixed in the Appendix A. Table 3 gives a summary of the scales used and the reliability scores that were attained in previous studies.

The IEIS is reliable and internationally applicable (Thompson, 2009). IEIS has general applicability to individuals with entrepreneurial intent regardless of whether they are nascent entrepreneurs or will not follow through with starting a business (Thompson, 2009) and hence was selected as an appropriate for measuring the outcome variable, entrepreneurial intent. Test-Retest reliability was demonstrated at intervals of same-day, 1-month, 2-month, and 6-month for same-sample stability (Thompson, 2009). The extraneous items in IEIS were removed; otherwise, they would lengthen the survey.

The EIQ was developed by Liñán and Chen (2009) and reported high validity for its factors which included attitude toward behaviour (ATB), subjective norms (SN) and perceived behavioural control (PBC). Liñán *et al.* (2011) demonstrated the applicability of the scale across cultures. However, the scale was modified to substitute subjective norms for bootstrapping, which showed high reliability (Cronbach alpha > 0.8) (Zhang & Cain, 2017).

The environmental hostility scale was adapted from Urban's (2010) study and found acceptable reliability scores.

Table 1. Consolidated sources of questionnaire items

Construct	Literature source	Dimensions	Comment on instrument
Entrepreneurial intentions Measured on a 7-point Likert scale: 1 = Strongly disagree to 7 = Strongly agree	Thompson (2009)	Entrepreneurial intentions	Cronbach's alpha of 0.89 showing good internal reliability (Thompson, 2009)
Entrepreneurial Intent Questionnaire Measured on a 7-point Likert scale: 1 = Strongly disagree to 7 = Strongly agree	Liñán & Chen (2009); Liñán <i>et al.</i> (2011); Kautonen <i>et al.</i> (2015)	Attitude towards behaviour Perceived behavioural control	Cronbach alpha values range from 0.77 to 0.94 for the dimensions (Liñán & Chen, 2009)
Bootstrapping potential Questionnaire Measured on a 7-point Likert scale: 1 = Strongly disagree to 7 = Strongly agree	Zhang & Cain (2017)	Bootstrapping	Cronbach alpha of 0.893 (Zhang & Cain, 2017)
Environmental hostility Questionnaire Measured on a 7-point Likert scale: 1 = Strongly disagree to 7 = Strongly agree	Urban (2010)	Perceived environmental hostility	Cronbach alpha of 0.742 (Urban, 2010)

3.5 Procedure for data collection

An online software – Qualtrics® - was used to design, distribute, capture, and summarise the data. Data was gathered using the study questionnaire over four months from November 2019 to February 2020.

Questionnaires were distributed to individual pharmacists using emails and were also posted on social networks. A link was posted on Facebook® and LinkedIn® requesting pharmacists to complete the survey. The link was sent with an attachment letter which had all the details and explanation of the study.

After the data was collected, the analysis had to begin, and the next section describes how the researcher conducted the data analysis.

3.6 Data screening and analysis

Data captured into Qualtrics® underwent a data quality check process which included screening the data for errors, coding, completeness, and reversed questions. Incomplete cases (44) and those that met the exclusion criteria (39) were excluded resulting in a sample of 360 viable cases.

The cases were further assessed for missing values, and four values were identified as missing. Little's missing completely at random (MCAR) test was performed in SPSS on the remaining 360 cases. The test output in the gave a p-value of 0.167 ($p > .05$); therefore, there was evidence of MCAR. Expectation maximisation (EM) method was used to impute the missing values as it offers the most straightforward approach to imputation of randomly missing data (Tabachnick & Fidell, 2013). The category of the sector of practice had one missing value and was consequently imputed using the median of the group as it was to be used as a control variable.

The study sought to answer research questions that relate to the strength, direction, and significance of the relationship of multiple predictors to the outcome variable and build a regression model with the most predictive power. Therefore, it is necessary to screen for violation of assumptions when conducting multivariate statistical procedures such as multiple linear regression. Violation of assumptions leads to results that are misleading, difficult to interpret and inappropriate for generalising to the population of interest (Field, 2013). The data was therefore tested for the following assumptions: the absence of outliers, normality, linearity, homogeneity of variance, independence of error terms and multicollinearity/collinearity.

The relationship between two variables can be assessed using correlation coefficients to determine the direction, strength, and significance of the relationship. These coefficients lie between -1 and $+1$ with values of ± 0.1 representing a small effect, ± 0.3 a medium effect and ± 0.5 a large effect (Field, 2013). Correlation analysis was used to identify variables, including control variables, that exhibited significant relationships with the outcome variable and were retained for further analysis in multivariate regression.

Multiple linear regression was used to underscore the prediction of the outcome variable (EI) from the predictor variables in effect testing for hypotheses 1 and 2 from the sample of 360. Hierarchical multiple regression was conducted to control for the effects of the control variables. Hierarchical regression was employed because the study wanted to focus in more detail on the unique contribution each predictor variable made in explaining the dependent variable. The final predictive model was chosen based on the size of the standardised regression weights, the R-square, R-square change, and the overall significance of the model of each variable (Tabachnick & Fidell, 2013).

The regression model showing only direct effects and relationship was not adequate to answer all the research questions and satisfy the study's objective. Therefore, mediation analysis was conducted to test indirect relationships between the predictor and outcome variables.

Mediation means that the predictor variable affects the outcome variable through a relationship with another variable called the mediator (Tabachnick & Fidell, 2013). The study posited that EH influences the outcome variable EI directly as well as indirectly through three mediators – ATB, BP and PBC. Therefore, a parallel multiple mediator model was run with the prerequisite that no mediator inadvertently influences the others (Hayes, 2018). The PROCESS tool in SPSS was used to assess the relationship using the conceptual model depicted in Figure 1.

3.7 Validity and reliability of research

Since this study used a questionnaire with multi-item scales to measure the different constructs, it was, therefore, critical to test for construct, scale and instrument validity and reliability. These tests help assess whether the research is correctly and consistently measuring what it purports to test and minimise measurement error (Field, 2013).

3.7.1 External validity

External validity relates to the generalisability of the research findings to the population (Schindler, 2019). It is about ensuring that the results from the sample will apply in real life and other contexts. The sample data was collected across different age groups and gender. To validate the collected data as representative of SA pharmacists, the proportion of males to females was compared with that of secondary data captured by SAPC. As of 28 March 2020, SAPC had a record of 16051 pharmacists comprising of 5813 males and 10238 females (South African Pharmacy Council, 2020). When computed in percentages, it is evident that the data collected can be used as a representative sample for SA pharmacists because Figure 2 shows similar gender characteristics between primary and secondary data. Therefore, this study can generalise its findings and conclusions to SA pharmacists because the distribution of the two data sets seems similar.

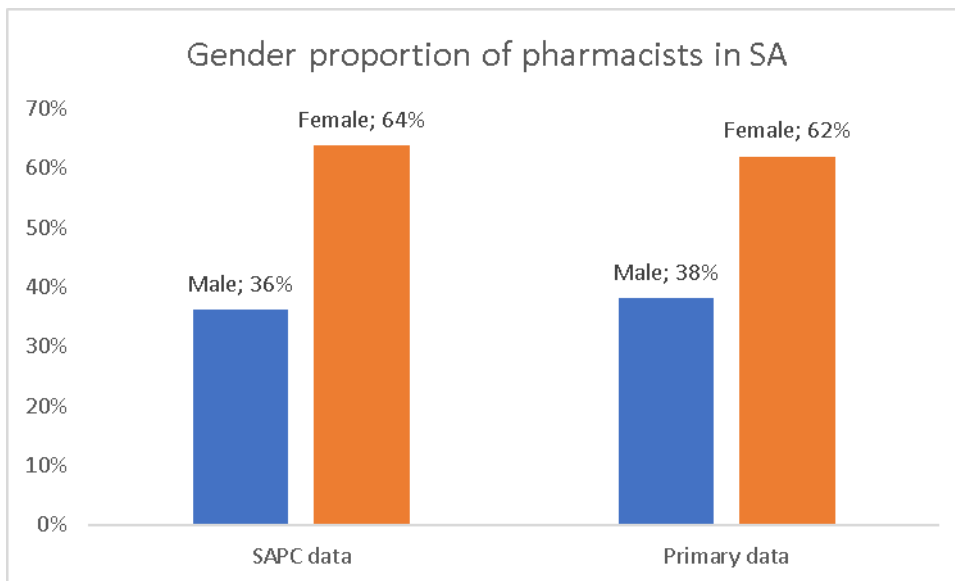


Figure 2. Gender proportion of pharmacists – SAPC data vs Primary data

Source: Primary data and South African Pharmacy Council (2020)

3.7.2 Internal validity

Internal validity relates to the accuracy and consistency of the scale in measuring of purported constructs (Field, 2013). The same scale was used for

all respondents to ensure internal validity. Importantly, construct validity was guaranteed. Construct validity is the degree to which the scale is consistent with the theoretical constructs that are being measured (Field, 2013). Construct validity was assessed through exploratory factor analysis, a technique used to combine variables that are collinear into factors and reduce the data set to a manageable size while retaining the critical information (Field, 2013).

Exploratory factor analysis (EFA) was conducted using IBM SPSS Dimension Reduction with principal axis factoring (PAF) optimised with Promax oblique rotation to extract the number and structure of factors (Tabachnick & Fidell, 2013). Pattern matrix was used for interpretative purposes as it elucidates the unique contribution each item makes to a factor (Field, 2013).

3.7.3 Reliability

Reliability refers to the instrument's ability to secure consistent results upon repeated application. Subject reliability was maximised by informing respondents beforehand the average duration of questionnaire completion and allowing them to complete at a time of their convenience. The electronic nature of the survey negated data-handling errors, ensuring the reliability of the data. The SPSS platform was used to perform the reliability test on all factor subscales using Cronbach Alpha algorithm to assess internal consistency. A Cronbach alpha greater than 0.7 is an acceptable value in the entrepreneurship literature as it suggests that the variability is approximately 70% true ability and 30% error (Field, 2013; Tabachnick & Fidell, 2013). Item total statistic is the average inter-item correlations and calculates an overall score for each item, then averages it. All the variables that had a corrected item-total correlation less than 0.2 were dropped from the study because they did not correlate well with the other items.

3.8 Limitations of the study

- The study was a cross-sectional quantitative survey hence limiting the ability to determine causal relationships (Schindler, 2019). The

researcher was unable to probe the reasons informing the results inherent in the quantitative nature of the study.

- The data collected was limited to a Likert scale of 1 to 7, and as such participants were limited in their ability to give unique information.
- The accuracy of the data analysis was limited to the capabilities of the researcher.

3.9 Ethical considerations

An ethics committee from the Wits Faculty of Commerce, Law, and Management approved the study's title before data collection began. The researcher is a pharmacist and is, therefore, a member of the SAPC, the professional body that provided the population list. Inevitably, professional contacts within the researcher's network were the initial targeted respondents. However, the sample size of over 300 assured that not only the researcher's network would be the respondents.

The researcher conducted the study in a manner that ensures its academic integrity and scientific validity. The researcher avoided unethical practices such as fabrication and plagiarism at all cost (Schindler, 2019). The study was conducted voluntarily with the privacy of the participants guaranteed. The questionnaire had an attached covering letter that described the nature of the research, how participation in the study would affect or benefit the pharmacists and ensured they were aware of their rights and protection with regards to participation. A compulsory yes/no question on the questionnaire obtained consent from each participant. The research instrument did not request any personal information, which ensured that respondents remained anonymous, and their responses confidential (Schindler, 2019). Furthermore, the researcher did not seek information beyond the terms of engagement.

CHAPTER 4: PRESENTATION OF RESULTS

4.1 Introduction

This chapter presents the results of the study based on the data and methodology detailed in the previous chapter. Demographic characteristics of the respondents are described concerning the identified control variables. The constructs are then analysed for validity and reliability. Multivariate regression models are then explained to test the hypotheses of the study.

4.2 Demographic profile of respondents

4.2.1 Gender

As depicted in Figure 2, the majority of the participants were female (62%). Gender is a significant predictor of entrepreneurship with males having a higher probability of engaging in entrepreneurial activity than females (Bosma & Kelley, 2018). Therefore, it was essential to control for the effects of gender when testing the hypotheses.

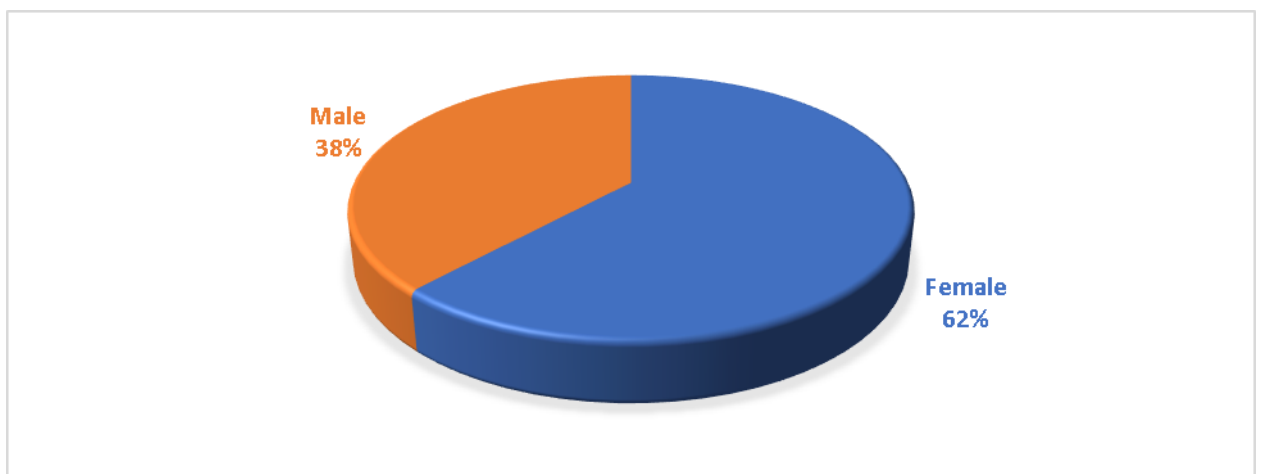


Figure 3. Respondents Gender

Source: Primary data

4.2.2 Age

As depicted in Figure 3, most of the respondents were under 34 years (80%). Controlling for age is essential as the 2018/2019 GEM report has noted that the highest prevalence of entrepreneurial activity is among those aged 25–34 years and 35–44 years (Bosma & Kelley, 2018). Individuals in these age groups are likely to be familiar with technological advances and feel enthusiasm for pursuing new opportunities. In the event of business failure and discontinuance, they have many working years ahead of them to engage in other income-generating options (Bosma & Kelley, 2018). Adults under the age of 25 tend to have little experience in their field of interests and those over the age of 45 are conservative with career prospects as they may be financially constrained with responsibilities such as families to support and hence tend to be unentrepreneurial (Bosma & Kelley, 2018).

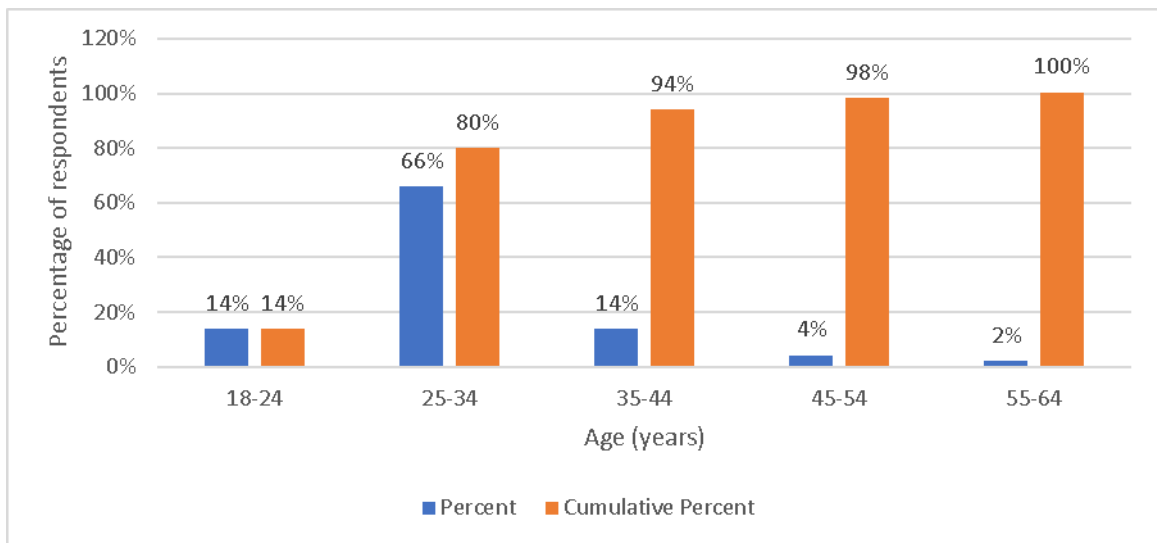


Figure 4. Respondents age

Source: Primary data

4.2.3 Work experience

Consistent with the young age demographics, Figure 4 shows that most of the respondents have under ten years of work experience. Work experience is pivotal to developing industry-specific human capital and understanding the

subtleties of industry-specific norms which significantly influence early-stage entrepreneurial activity (Schenkel, D'Souza, & Braun, 2014). It is, therefore, essential to control for the length of work experience when testing the hypotheses.

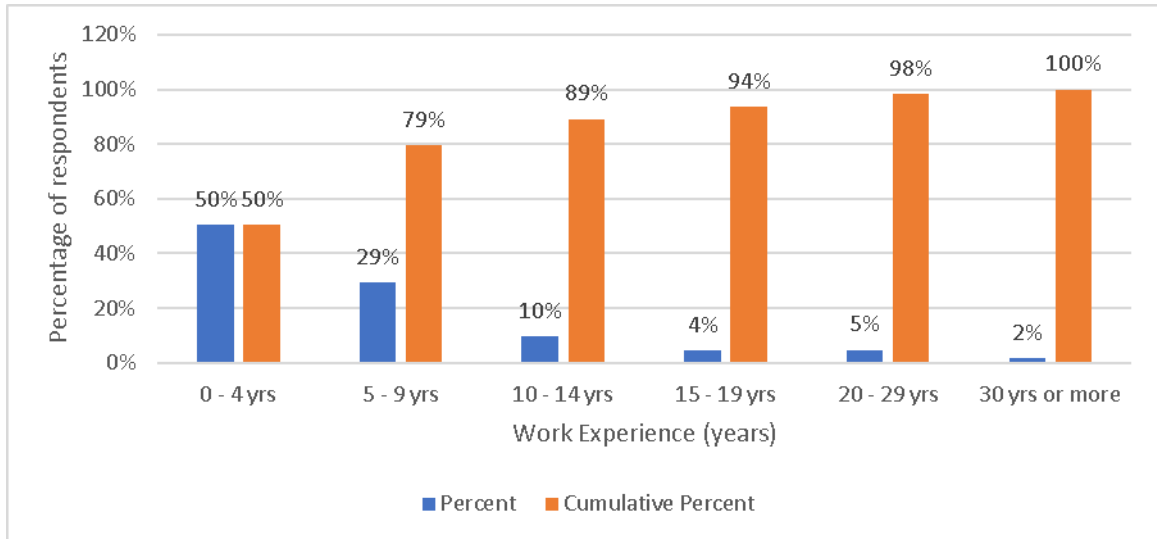


Figure 5. Respondents length of work experience

Source: Primary data

4.2.4 *Sector of practice*

Most of the respondents are in private sector employment. Public-sector employees have been identified as non-entrepreneurial exhibiting meagre conversion rates to entrepreneurship because of the security of tenure under government employment (Kibler, 2013). Therefore, it is essential to control for the effects of public-sector employment when testing the hypotheses.

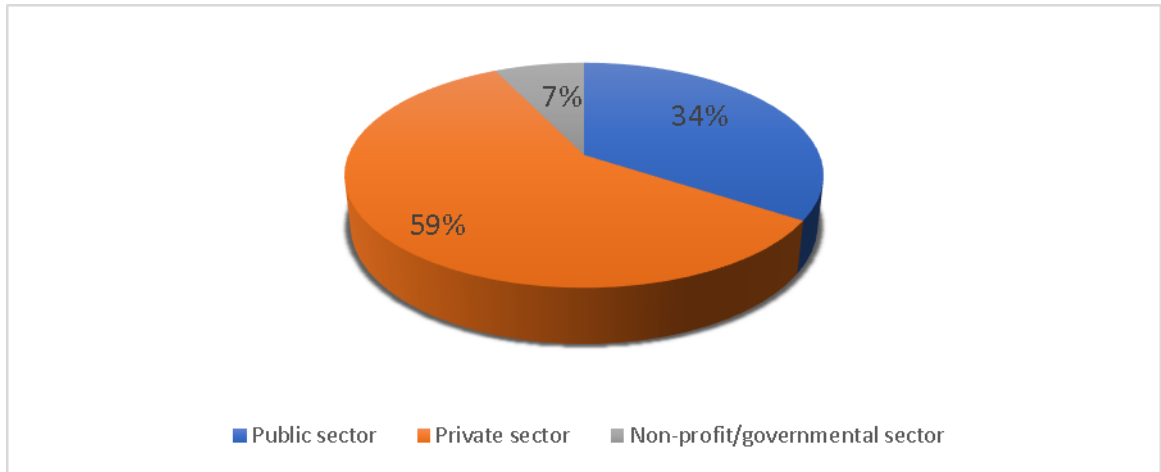


Figure 6. Respondents sector of practice

Source: Primary data

4.2.5 Business experience

Individuals with human capital of experience specific to primary tasks of entrepreneurs, such as, starting up a new venture and managing a new venture have a higher propensity of starting entrepreneurial ventures (Schenkel, D'Souza, & Braun, 2014). Table 8 shows that a minority of the individuals (28%) had previous business experience. However, it is essential to control for the effects task-specific human capital acquired through prior start-up experience (Odumosu, 2014).

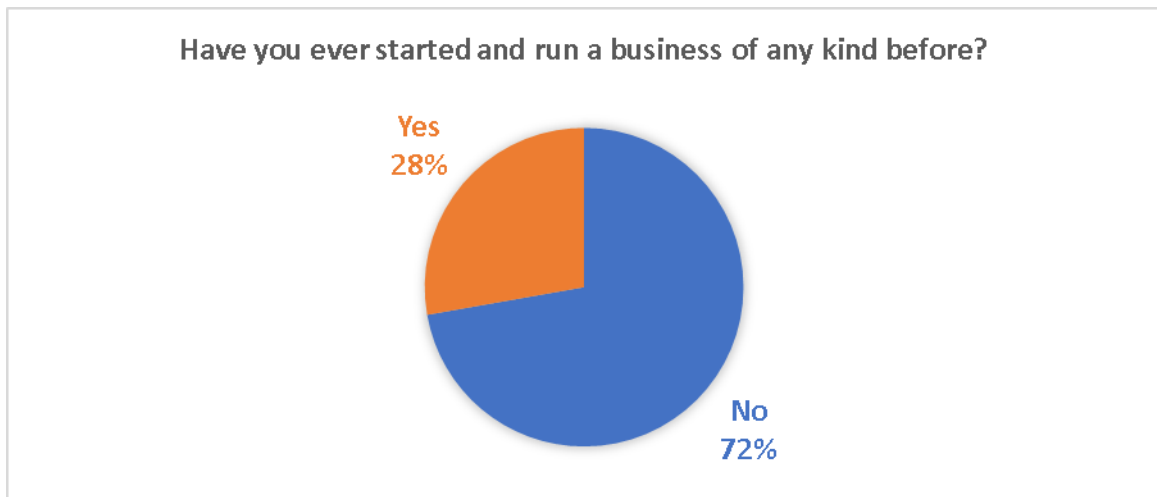


Figure 7. Previous business experience of respondents

Source: Primary data

4.2.6 Family business

Table 9 shows that most of the respondents have a family background of business activity. It has been found that familial role models provide positive experiences for individuals influencing their self-perception as entrepreneurs (Laviolette, Rabu Lefebvre, & Brunel, 2012). Therefore, it is essential to control for the effects of family business when testing the hypotheses.

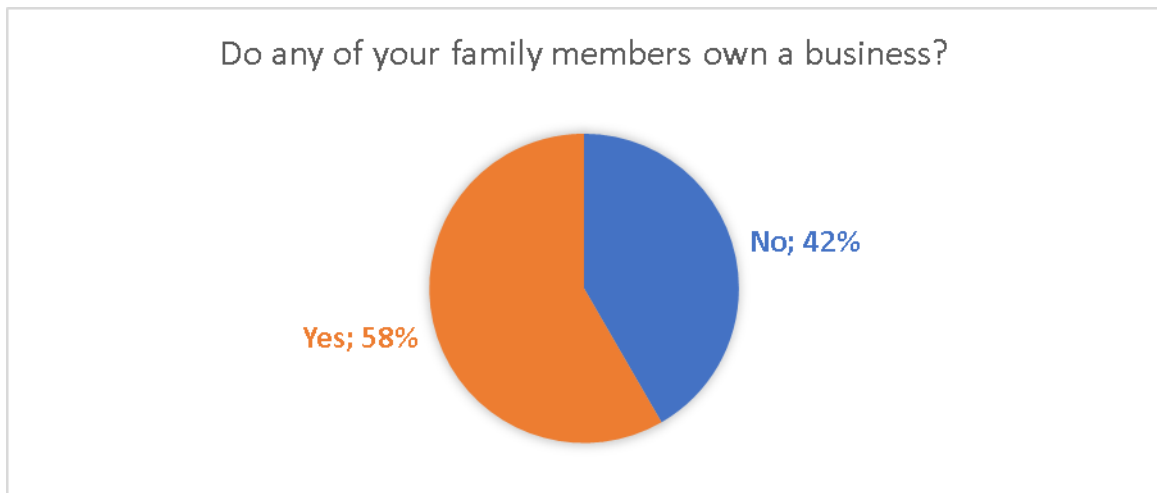


Figure 8. Respondents family business history

Source: Primary data

4.3 Data analysis

4.3.1 *Exploratory factor analysis*

Exploratory factor analysis (EFA) provides a mechanism of establishing the degree to which items, as observable phenomena, reflect an underlying psychological concept or concepts (Tabachnick & Fidell, 2013). Adequate sample size is a crucial assumption to meet in order to provide a stable factor solution. Tabachnick and Fidell (2013) suggest a sample of at least 300 cases in order to interpret factor loadings those that are below 0.5. The study met the requirement with 360 cases and thus factor analysis algorithm was suitable.

Furthermore, Kaiser-Meyer-Olkin measure of sampling adequacy ($KMO=0.863$, overall) and the anti-image correlation matrix with $KMO>0.5$ for the individual items indicated that the sample size and set of items were satisfactory for factor analysis.

The R-matrix was scanned for interitem correlations. Most of the items intended to measure a specific construct such as ATB had average interitem correlations higher than .30 at statistically significant values of $p < .05$. All items had values

less than 0.9, and the determinant of $0.001 > 0.00001$ indicates that there are no multicollinearity issues that needed to be addressed.

The Bartlett's test of sphericity was conducted to test that the variables in the original correlation matrix are significantly different from zero and thus appropriate for factor analysis (Field, 2013). Based on Bartlett's test results of Approx. Chi-Square =2481.914, DF=136, $p < 0.05$, the correlations between variables are significantly different from zero and suitable for factor analysis.

Exploratory factor analysis was run on the 22-item research questionnaire, which had five subscales. A principal axis factoring was used as the extraction algorithm with Promax rotation through IBM SPSS Dimension reduction on a sample of 360 pharmacists. Items with communalities less than 0.2 after extraction (EH1R and EH5) were eliminated for not loading appropriately, and the factor analysis was rerun (Child, 1970). Factor loadings above .40 (16% overlapping variance) were used for retaining items using the pattern matrix for interpretative purposes (Field, 2013).

After removing items with factor loadings lower than 0.4 (EI6R, PBC4R, EH1R and EH5), 18 items were extracted. EI1 was removed from factor 1 as it improved the scale's reliability. Therefore, 17 items were extracted into five factors related to attitude towards behaviour (ATB), entrepreneurial intentions (EI), bootstrapping (BP), perceived behavioural control (PBC) and environmental hostility (EH) as depicted in Table 4. Kaiser Criterion of eigenvalue greater than one depicted in Table 10 in Appendix C shows that the five factors extracted explained 54.265% of the variance in the extracted items. Kaiser's criterion is only valid when the average communalities for a sample size that exceeds 250 is greater than 0.6; otherwise, it overestimates the number of factors (Field, 2013). The communalities after extraction averaged 0.543, and thus Kaiser's criterion was invalidated (see Table 9 in Appendix C).

The scree plot extracted five factors based on eigenvalues greater than one, and a sample size greater than 300, as depicted in Figure 15 in Appendix C. The point of inflexion was inconclusive as it lay between 4 and 5 factors. However, the convergence between the scree plot and Kaiser Criterion of

eigenvalue's greater than one supported a 5-factor solution. Therefore, five factors were retained with their respective items as depicted in the pattern matrix.

EFA gave a good result that is within acceptable levels based on the sample size ($n=360$) and factor loadings higher than .40 (each item explaining more than 16% of the variance), it was concluded that the factor loadings are significant at $p=0.01$ (Tabachnick & Fidell, 2013).

4.3.2 Reliability

The five constructs were measured using Cronbach alpha, which indicates a higher reliability of the measurement scale when alphas are above 0.7. To improve the Cronbach's alpha, corrected item-total correlation, and Cronbach's alpha if the item is deleted were assessed. Corrected item-total correlation refers to the correlation between each item, and it should not be less than 0.3. Otherwise, that item should be eliminated to improve reliability (Field, 2013). Cronbach's alpha if item is deleted are the values of overall alpha if that item is deleted. Any value that is substantially greater than the overall alpha when deleted must be eliminated from the scale. However, if such elimination is performed, the exploratory factor analysis must be rerun (Field, 2013).

The Attitude towards behaviour (ATB) scale with four items had an excellent Cronbach alpha of 0.906 and provided corrected item-total correlations >0.3 . Entrepreneurial intention scale had good reliability (4 items; $\alpha=0.780$) which is >0.7 . All inter-item correlations were >0.3 , indicating that all items correlated with their respective scales (Field, 2013). Bootstrapping (BP) scale was highly reliable (3 items; $\alpha=0.814$), and the corrected item-total correlation is greater than 0.3 for all three items. There was no substantial change when any of the items were deleted from the scales. Therefore, the scales were accepted as consistent, reliable and demonstrate convergent validity.

The reliability scale of perceived behavioural control (PBC) was not adequate (3 items; $\alpha=0.620$) since it is below 0.7 (Field, 2013). However, inter-item correlations are >0.3 improving the scales stability and reliability. An alpha of

0.5 is considered acceptable in basic research, and thus the scale was considered acceptable for the study (Field, 2013).

The reliability of environmental hostility (EH) scale was moderate (3 items; $\alpha=0.630$) since it was below 0.7. Two inter-item correlations are >0.3 , and one (EH2R/EH4R) is <0.3 compromising the scales stability and reliability. The item with low correlation could not be eliminated as it would violate the minimum number of items per construct of three (Field, 2013). However, according to Field (2013), an alpha of 0.5 is considered acceptable in basic research. Thus, the scale was considered acceptable for the study.

In conclusion, all the variables had moderate-to-high reliability.

Table 2. Extracted factor items

	ATB	EI	BP	EH	PBC
ATB3 If I had the opportunity and resources, I would love to start a business.	0,893				
ATB2 Being an entrepreneur would give me great satisfaction.	0,872				
ATB1 I consider starting my own business desirable.	0,802				
ATB4R A career as an entrepreneur is totally unattractive to me.	0,758				
EI5R I do not read books on how to set up a business.		0,813			
EI3R I never search for business start-up opportunities.		0,639			
EI2 I spend time learning about starting a business.		0,623			
EI4 I am saving money to start a business.		0,481			
BP2 My close friends would provide support to help me start or finance a business.			0,857		
BP1 My close family members would provide support to help me start or			0,760		

finance a new business.					
BP3 My colleagues would provide support to help me start or finance business.			0,723		
EH3 My industry is very risky; one bad decision could easily threaten the viability of a business.				0,771	
EH2 The failure rate of businesses in my industry is high.				0,604	
EH4 Competitive intensity is high in my industry.				0,444	
PBC2 If I tried to start a business, I would have a high chance of succeeding.					0,672
PBC1R To start a business and keep it working would be difficult for me.					0,603
PBC3 I know how to develop an entrepreneurial project.					0,456
Initial Eigenvalues	5,368	2,239	1,620	1,181	1,107
% of variance in initial items	31,574	13,173	9,530	6,947	6,513
Cronbach α	0,906**	0,780**	0,814**	0,630*	0,620*

** Good scale ($\alpha > 0,7$) * Acceptable scale ($\alpha > 0,5$)

4.3.3 Assumptions Testing

Multivariate statistical techniques were used to test the hypotheses. However, the techniques are sensitive to discrepant data such as outlying cases which can distort statistics (Tabachnick & Fidell, 2013). It is crucial to screen the data for undue influence of such cases and violation of any assumptions for the multivariate statistical technique used, otherwise, the results become misleading. They cannot be generalised to the population of interest (Tabachnick & Fidell, 2013). Therefore, the section will begin with testing for assumptions in multivariate analysis. Some assumptions can be tested before regression analysis, and some are tested as the analysis is run.

Assumption 1: Absence of outliers

An outlier is a case with an unusual score on one variable (a univariate outlier) or a combination of unusual scores on two or more variables (multivariate

outlier) that misrepresent regression analysis model parameters (Tabachnick & Fidell, 2013). They lead to results that do not generalise except to another sample with the same kind of outlier. Once potential outliers are located, the researcher decides whether to transform variables, delete cases, or change scores on cases (winsorize) to reduce their impact. Tabachnick and Fidell (2013) recommends investigating univariate outliers first (boxplot, Tukey), then bivariate distributions (standardized residuals more than three absolute values from the regression line) and finally scores that stray significantly from the multivariate average of all scores (MD, Cook's distance)

Univariate outliers test

Interquartile range (IQR) “Boxplot” rule: SPSS uses $1.5 \times (IQR)$ and $3 \times (IQR)$ as the multiplier (“k”). It denotes outliers by a small circle where $k=1.5$ for “out” values, and an asterisk where $k=3$ for “far out” or extreme values and no labelling if there are no outliers (Field, 2013).

Figure 8 shows there were no extreme values detected, and it was concluded that there was no problem of outliers in this data set since the out values are generally not treated as outliers (Field, 2013).

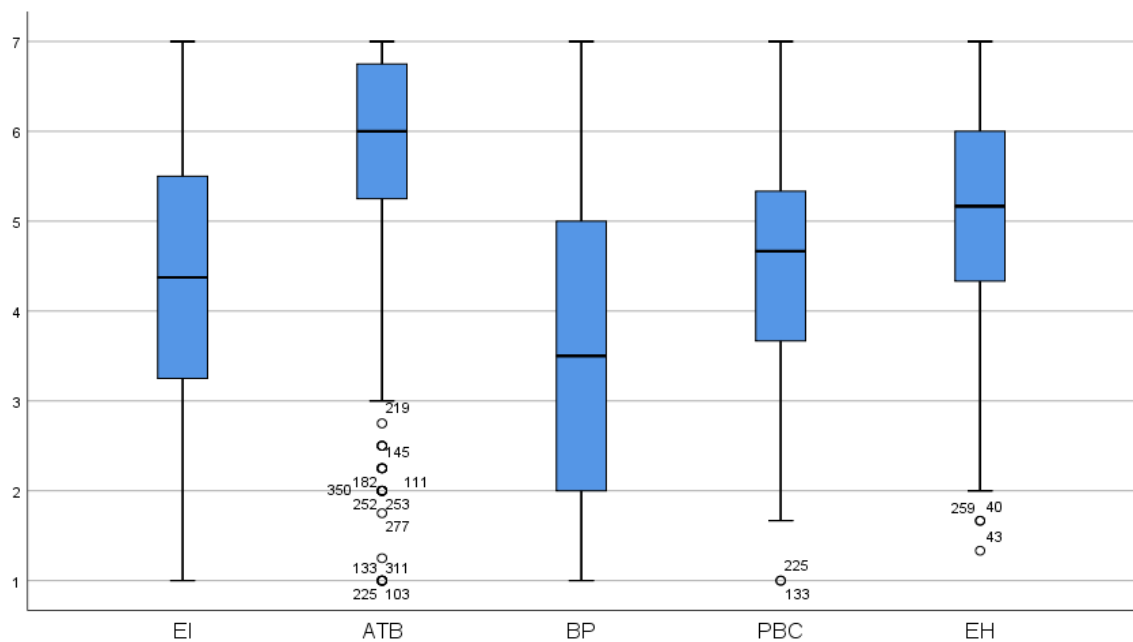


Figure 9. Boxplot of constructs

Source: Primary data

Percentile outlier labelling rule: According to Hoaglin, Iglewicz, & Tukey, (1986), the two multipliers 1.5 and 3.0 that SPSS uses in the IQR rule have proven to be wrong 50% of the time when tested. Using Percentile outlier labelling rule to calculate a cut-off range of upper and lower bounds, ATB had six potential outliers with scores less than 1.95 as depicted in Table 5.

Table 3. Critical outlier bounds

	25TH PERCENTILE	75TH PERCENTILE	K	LOWER BOUND	UPPER BOUND
EI	3,25	5,50	2,20	-1,70	10,45
ATB	5,25	6,75		1,95	10,05
BP	2,00	5,00		-4,60	11,60
PBC	3,67	5,33		0,00	9,00
EH	4,33	6,00		0,67	9,67

Standard deviations (SD) rule: Cases with standardized scores above an absolute value of 3.29 ($p < .001$, two-tailed test) are potential outliers (Field, 2013). ATB had 6 cases with z-scores outside the boundaries of ± 3.29 SD.

The convergence of the Percentile outlier labelling rule and SD rule in identifying the 6 cases in ATB was deemed enough to label them as potential univariate outliers. The outliers outside of the lower bound of 1.95 in ATB were winsorized to the next lowest value of 2 (Tabachnick & Fidell, 2013).

Multivariate outliers test

Multivariate (MV) outliers refer to observations with an unusual combination of scores. MV outliers tend to have an undue influence on model parameters and warrant deletion from the data set (Tabachnick & Fidell, 2013). Mahalanobis Distance (MD) is used to detect MV outliers.

Mahalanobis distance is the distance of a case from the centroid of the remaining cases, where the centroid is the point created at the intersection of the means of all the variables (Tabachnick & Fidell, 2013). The criterion for multivariate outliers is Mahalanobis distance at $p < .001$ for the Chisq (X^2) value

evaluated with degrees of freedom equal to the number of variables (Tabachnick & Fidell, 2013). No multivariate outliers were detected using MD distance, as depicted in Figure 10.

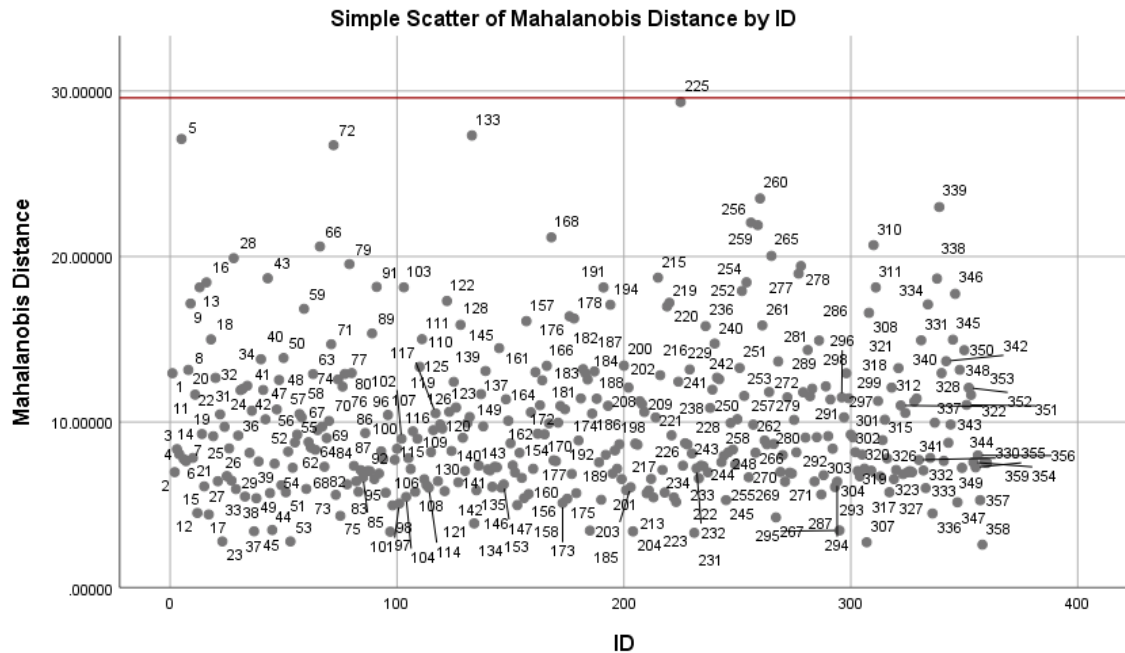


Figure 10. Pictorial depiction of Mahalanobis Distance

Source: Primary data

Residuals plot. A case exerting a massive influence on a regression model can produce a small residual and be overlooked as MV outlier. Therefore, it is necessary to examine the residuals plot of standardized residuals vs standardized predictors (zresid vs zpred) for outlying cases. The statistical criterion for identifying an outlier in the solution when the number of cases is less than 1000 is $p = .001$, associated with a standardized residual above absolute 3.29 (Tabachnick & Fidell, 2013). Figure 11 identified two cases with standardized residuals above absolute three but were still within the bounds of 3.29 (Tabachnick & Fidell, 2013). They were carefully monitored but were not deleted.

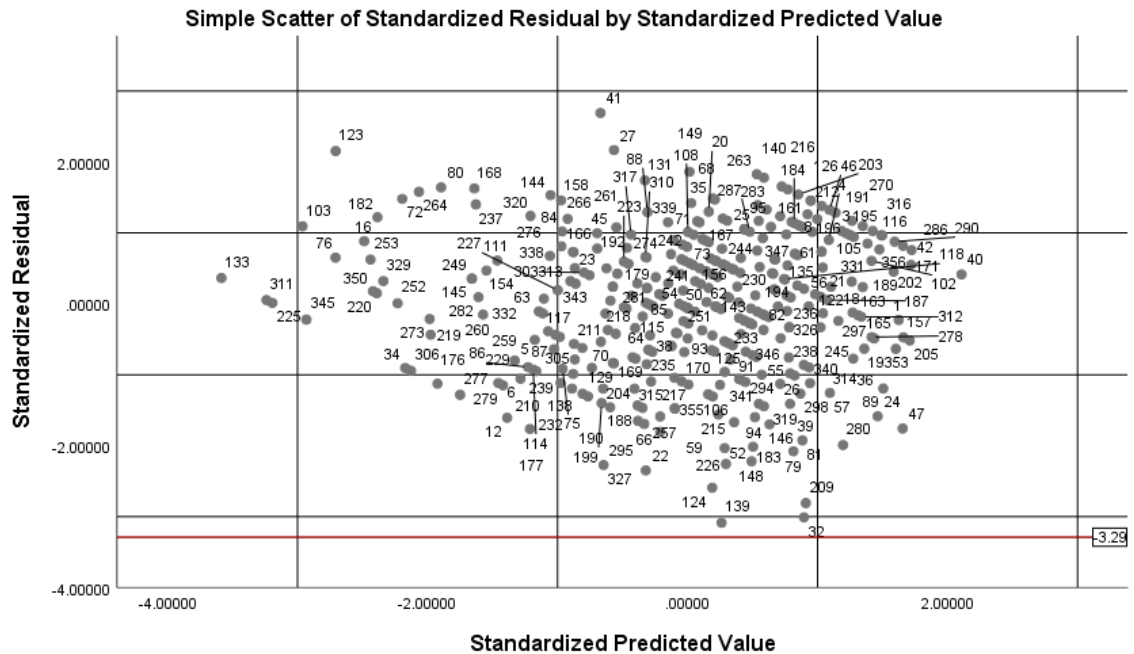


Figure 11. Standardized residuals versus Standardized predicted values

Source: Primary data

Assumption 2: Normality

Multivariate normality is the assumption that all variables, and all linear combinations of variables, are normally distributed (Field, 2013). Screening continuous variables for normality is important, especially when an inference of generalisable results is the target (Tabachnick & Fidell, 2013). However, the central limit theorem suggests that predictor variables do not need to be normally distributed since the sampling distributions are normal even if the raw scores are not (Field, 2013). Either statistical or graphical methods assess normality of variables. The study utilised Likert scales which are difficult to visualise for univariate normality in the histogram; therefore, Wan Nor's (2015) graphical assessment of multivariate normality using Chi-square and Mahalanobis distance plot was favoured. Figure 12 shows the simple scatter plot with a clear straight line of the data points suggesting multivariate normality (Wan Nor, 2015).

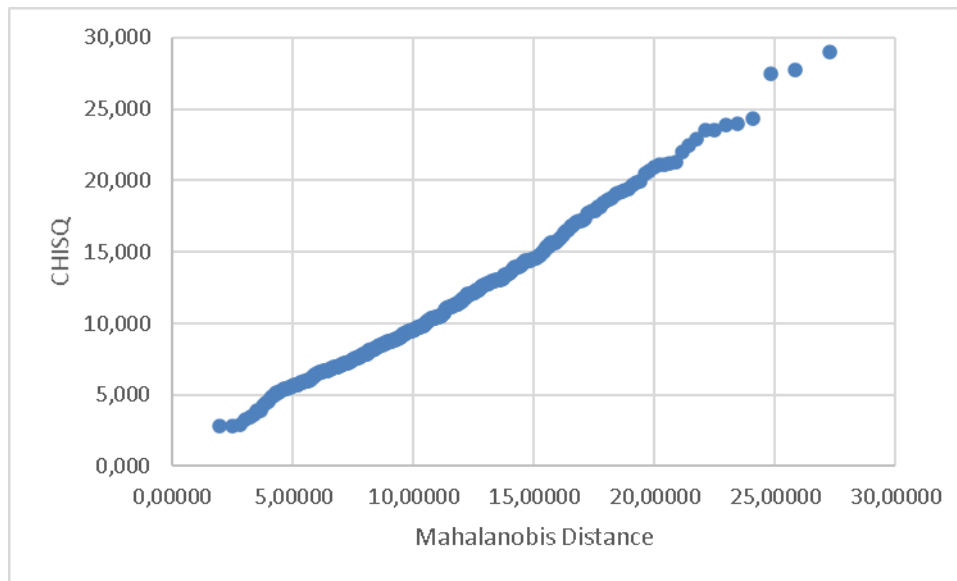


Figure 12. Chi-square versus Mahalanobis distance plot for constructs

Source: Primary data

Assumption 3: Linearity

The relationship between the outcome and predictor variables should be linear in order to run a linear regression analysis; otherwise, the model is invalid or can be improved through transformation (Tabachnick & Fidell, 2013). Linearity can be assessed through inspection of scatterplots. Figure 13 shows a matrix scatterplot of linear relationships between the outcome and predictor variables. Furthermore, the graphical assessment of multivariate normality in Figure 12 using Chi-square and Mahalanobis distance plot implies a linear relationship between an outcome variable and several predictors (Wan Nor, 2015).

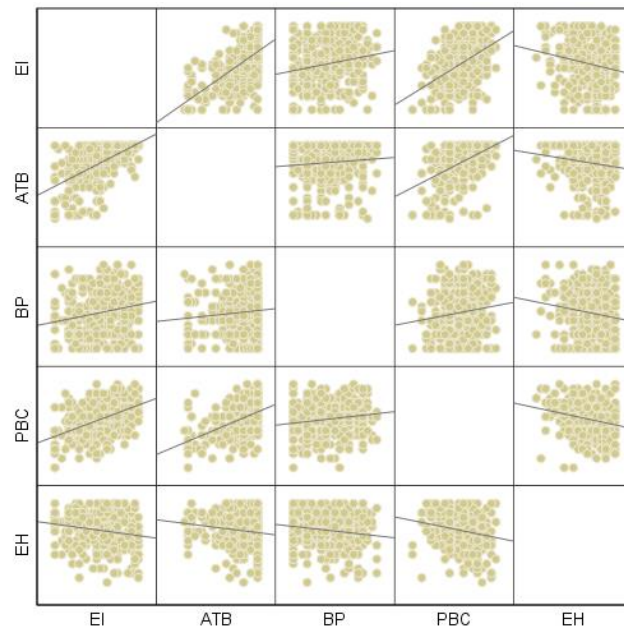


Figure 13. Scatter plots

Source: Primary data

Assumption 4: Homoscedasticity

Homoscedasticity means that at each level of the predictor variables, the variance of the residuals about predicted outcome scores is the same (Field, 2013). Violating this assumption invalidates confidence intervals and significance tests. Examining the overall shape of the residual's scatterplot of standardized predicted outcome scores and errors of prediction offers a test of the assumption in ungrouped data (Tabachnick & Fidell, 2013). Homoscedasticity is depicted as a band enclosing the residuals that are approximately equal in width at all values of the predicted outcome variable with no evidence of funnelling. Homoscedasticity is related to the assumption of normality because when the assumption of multivariate normality is met, the relationships between variables are homoscedastic (Tabachnick & Fidell, 2013). The residuals in Figure 11 seem to be scattered evenly on the residual plot with an oval shape and a concentration in the centre. However, two residuals fall out of the -3 and 3 of the standard residuals cut-off violating the homoscedasticity assumption. Heteroscedasticity, the failure of homoscedasticity, can be caused by nonnormality of one of the variables or by the fact that one variable is related to some transformation of the other. However, the challenges associated with

interpreting transformed data led to the researcher avoiding transformations of variables (Tabachnick & Fidell, 2013).

Heteroscedasticity is not fatal to an analysis of ungrouped data if linear relationships between variables has been established but instead weakens the regression analysis (Tabachnick & Fidell, 2013). Violations of homogeneity usually can be corrected by using untransformed variables with more stringent significant levels of $p < .025$ for moderate violations and $p < .01$ for severe violations. The violation of homoscedasticity was moderate; therefore, p-values of less than .025 were employed to generalise the regression model (Tabachnick & Fidell, 2013).

Assumption 5: Independence of errors

Independence of errors means that errors of prediction for any two observations are uncorrelated and independent of one another (Tabachnick & Fidell, 2013). Violation of the assumption of independence invalidates confidence intervals and significance tests. Violation of the assumption is associated with the sequence of cases and the order they were assessed (Field, 2013). This assumption can be tested with the Durbin–Watson (DW) test, with a value of 2, meaning that the residuals are uncorrelated. If DW is less than one or greater than three, then it suggests that the error terms are correlated (Durbin & Watson, 1951; Field, 2013). Table 6 provides evidence of independent errors with $DW=2.103$.

Assumption 6: Multicollinearity

The test of multicollinearity assumes that the variables are independent, and there is no perfect linear relationship between two or more variables (Field, 2013). In regression, multicollinearity is signalled by substantial regression coefficients ($r > 0.8$) indicating a high likelihood of predictors providing redundant outcome scores (Field, 2013). Multicollinearity produces misleading and unreliable regression models. Multicollinearity can be eliminated by excluding one of the highly correlated variables from the model or aggregating into one variable. Table 5 shows the correlation coefficients of the different variables, and none of them has a coefficient ($r>0.8$).

Moreover, Variance inflation factor (VIF) was used to scan further and identify multicollinearity. VIF tells us whether a predictor has a strong linear relationship with other predictor variables. VIF index values should be less than ten and greater than 1 to rule out multicollinearity (Field, 2013). Table 10 in the provides the collinearity statistics with $VIF < 10$ and > 1 , which suggest there is no collinearity problem.

The convergence of the two tests led to the conclusion that there was no problem of multicollinearity.

4.4 Descriptive statistics

The average scores of the items aggregating into a factor were calculated to derive predictor and outcome variables. The descriptive statistics of the variables are presented in Table 6. Pharmacists reported a moderate level of entrepreneurial intentions ($\mu=4.32$, $SD = 1.551$). ATB had the highest mean (5.78) followed by EH (5.06), then PBC (4.49), then EI (4.32) and lastly BP (3.59). The mean of EH and ATB were well above the Likert scale midpoint of 4, indicating that the attitude towards venturing was positive despite operating in an environment perceived to be very hostile to entrepreneurial activity. The median and mean scores were similar for all constructs except for ATB signalling a possible challenge with skewness (Field, 2013).

Table 4. Descriptive statistics of constructs

		EI	ATB	BP	PBC	EH
N	Valid	360	360	360	360	360
	Missing	0	0	0	0	0
Mean		4.32	5.78	3.59	4.50	5.06
Median		4.38	6.00	3.50	4.67	5.17
Mode		4	7	2	5	6
Std. Deviation		1.551	1.330	1.568	1.203	1.169
Skewness		-.178	-1.412	.097	-.194	-.561
Std. Error of Skewness		.129	.129	.129	.129	.129
Kurtosis		-.674	1.404	-.966	-.466	.053
Std. Error of Kurtosis		.256	.256	.256	.256	.256
Minimum		1	2	1	1	1

Maximum		7	7	7	7	7
Percentiles	25	3.25	5.25	2.00	3.67	4.33
	50	4.38	6.00	3.50	4.67	5.17
	75	5.50	6.75	5.00	5.33	6.00

4.5 Correlation and means analysis

Correlation analysis was performed to assess the strength, size, direction, and significance of relationships that exist between variables analysed (Field, 2013). To account for confounding factors that may influence the outcome variable control variables were incorporated into the correlation analysis. Gender, previous business experience and family business history were dichotomous and were thus analysed using point-biserial correlation coefficients. The control variables of age, sector of practice and work experience are ordinal and were not subjected to parametric test assumptions, therefore, Spearman's correlation analysis, a non-parametric test statistic was appropriate for analysis (Field, 2013).

Table 5 consolidates the correlation coefficients from all the variables. Entrepreneurial intentions as the outcome variable had statistically significant relationships with all the predictor variables. There was a large effect size between the positive relationship of ATB and EI ($r = .596$; $p < 0.01$). The relationship between PBC and EI was moderate and positive ($r = .482$; $p < 0.01$). BP and EI had a positive relationship of small effect ($r = .201$; $p < 0.01$). The results also show that there was a significant relationship between entrepreneurial intentions and the control variables of gender and previous business experience all at $p < 0.01$.

Furthermore, some of the control variables showed relationships with predictor variables. To determine if the predictor and outcome variables differed significantly on account of the control variables, a comparison of means analysis was carried. Separate independent samples t-tests identified the control variables gender, Business_Exp and Family history as significant contributors to differences in the constructs.

Males reported higher EI scores, ($\mu = 4.82$, $sd = 1.542$) than females ($\mu = 4.01$, $sd = 1.476$) at $p < .001$. Similarly, men had statistically significant higher scores than women in ATB and PBC at $p < .01$.

Pharmacists who had previous business experience (Business_Exp) reported higher scores in EI ($\mu = 5.02$, $sd = 1.415$) than those who do not have any previous business experience ($\mu = 4.05$, $sd = 1.515$) at $p < .001$. Similarly, ATB and PBC scores were higher for pharmacists who have previous business experience at $p < .001$.

Pharmacists who have family members who own a business reported higher scores in BP ($\mu = 3.89$, $sd = 1.622$) than the pharmacists who do not have family members with businesses ($\mu = 3.17$, $sd = 1.387$) at $p < .001$.

In summary, correlation analysis was used to identify the independent variables, including the control variables that could predict the outcome variable EI. It was concluded that the outcome variable EI had positive and significant relationships with the independent variables – EH, ATB, BP and PBC at $p < .01$. The most robust relationship was with ATB followed by PBC then BP and lastly EH. Only gender and previous business experience had significant relationships with the outcome variable EI. However, the predictive capacity of the variables could not be assessed using correlation analysis, necessitating multiple regression analysis.

Table 5. Correlation coefficients

	1	2	3	4	5	6	7	8	9	10	11
1. EI	1										
2. ATB	.596**	1									
3. BP	.201**	0,090	1								
4. PBC	.482**	.468**	.148**	1							
5. EH	-.183**	-.138**	-.151**	-.209**	1						
6. Gender	.256**	.201**	0,006	.148**	-0,030	1					
7. Business_Exp	.282**	.232**	0,028	.279**	-0,089	.255**	1				
8. Family_business	0,067	-0,037	.227**	0,069	0,012	-.127*	0,096	1			
9. Age [#]	0,029	-0,075	-0,064	0,075	-0,032	0,088	.201**	0,098	1		
10. Work_Exp [#]	0,024	-0,078	-0,060	0,043	-0,042	-0,039	.178**	.122*	.711**	1	
11. Sector [#]	0,025	-0,025	0,013	-0,006	-0,033	-0,087	0,044	.109*	.115*	.159**	1

** . Correlation is significant at the 0.01 level (2-tailed).

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

#. Spearman's rho coefficient.

4.6 Hierarchical multiple regression

The objective of multiple regression analysis is to determine the predictive capacity of predictor variables to outcome variables (Field, 2013). Hierarchical multiple regression is one of the major types of multiple regression in which predictor variables are entered into a regression model in a sequential order specified by the researcher. Each predictor variable is then assessed for its unique contribution to the model at its point of entry (Tabachnick & Fidell, 2013). The regression model that was to be assessed integrated control variables that had been identified in correlation analysis, therefore, it was essential to enter the variables in order of less importance first and variables of significant importance at later steps (Tabachnick & Fidell, 2013). The control variables were of less importance based on the study objectives and were entered first. The focal predictors were then entered in ascending order based on the

magnitude of their correlation coefficients. This would allow the variables with strong linear relationships to be evaluated for what they add to the prediction over and above the weaker variables (Tabachnick & Fidell, 2013).

The linear regression command in SPSS was used to perform the five-step analysis process, starting with control variables followed by adding each of the predictor variables in blocks to the regression model. With EI as the outcome variable, R-square change was used to assess the unique contribution of the three predictors to explaining variance in EI as the predictive capacity increased when new predictor variables were entered, in addition to the control variables.

- Model 1: The control variables were entered first in the model
- Model 2: Environmental hostility (EH) was entered next as it had the smallest correlation coefficient
- Model 3: Followed by bootstrapping (BP) which is the second weakest variable
- Model 4: Followed by perceived behavioural control (PBC) which is the second strongest variable
- Model 5: Finally attitude towards behaviour was entered as the last predictor variable since it was the strongest of the four, to assess its added value over the weaker variables.

Table 6 shows the hierarchical regression output that reveals the results from the different models. All the models were statistically significant at $p < 0.01$. Model 1 indicates that 12.7% of the variability in EI was accounted for by the control variables. Model 2 shows that adding EH ($\Delta R^2 = 0.025$) to the model increased the model's predictive capacity marginally by 2.5% to 15.2% of the variance in EI. Model 3 reveals that adding BP to the model increased its predictive capacity from 15.2% to 17.5% ($\Delta R^2 = 0.023$). The 2.3% increase in predictive capacity represents the contribution bootstrapping from important referents has in explaining the variance in EI. Model 4 shows that adding PBC ($\Delta R^2 = 0.134$) to the model increased the model's predictive capacity by 13.4%

in a statistically significant manner to give 30.9% of the variability in EI. Finally, the predictive capacity of model 5 rose to 45.3% from 30.9% after adding the strongest variable ATB ($\Delta R^2 = 0.148$) to the model. This is equivalent to a 14.8% increase in predictive capacity, which represents the attitude towards venturing.

Model 5 is the overall hierarchical regression model that was used to quantify the individual relationships between predictor and outcome variables using regression coefficients at $p < 0.01$ depicted in Table 7. It reveals that:

- If ATB increases by one unit then EI increases by 0.497 units
- If PBC increases by one unit then EI increases by 0.266 units, and
- If BP increases by one unit, then EI increases by 0.109 units.

In sum, controlling for demographic variables, the predictor variables explained 33% of the variance in EI ($\Delta F (10,349) = 29.284$, $p < .001$, $\Delta R^2 = .330$). However, an analysis of standardised regression coefficients in Table 11 (Appendix C) reveals that EH ceases to be a significant predictor of EI ($p > 0.05$) when the strong predictors PBC and ATB are introduced into the model. The loss of strength and significance of EH as a predictor alludes to a possibility of mediation effects (Hayes, 2018).

Table 6. Hierarchical regression model summary

Model Summary ^f										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.356 ^a	.127	.112	1.46164	.127	8.530	6	353	.000	
2	.389 ^b	.152	.135	1.44269	.025	10.336	1	352	.001	
3	.418 ^c	.175	.156	1.42488	.023	9.855	1	351	.002	
4	.556 ^d	.309	.291	1.30600	.134	67.806	1	350	.000	
5	.673 ^e	.453	.437	1.16370	.144	91.837	1	349	.000	2.103

a. Predictors: (Constant), Sector, Business_Exp, Family_business, Age, Gender, Work_Exp

b. Predictors: (Constant), Sector, Business_Exp, Family_business, Age, Gender, Work_Exp, EH

c. Predictors: (Constant), Sector, Business_Exp, Family_business, Age, Gender, Work_Exp, EH, BP

d. Predictors: (Constant), Sector, Business_Exp, Family_business, Age, Gender, Work_Exp, EH, BP, PBC

e. Predictors: (Constant), Sector, Business_Exp, Family_business, Age, Gender, Work_Exp, EH, BP, PBC, ATB

f. Dependent Variable: EI

Table 7. Summary of coefficients

Coefficients ^a								
Model	Antecedents	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
5	(Constant)	-0,152	0,600		-0,253	0,800		
	Gender	0,414	0,137	0,130	3,026	0,003	0,853	1,172
	Business_Exp	0,255	0,152	0,074	1,677	0,094	0,811	1,234
	Family_business	0,152	0,132	0,049	1,157	0,248	0,892	1,121
	Age	-0,074	0,142	-0,038	-0,521	0,602	0,298	3,357
	Work_Exp	0,053	0,093	0,041	0,566	0,571	0,296	3,375
	Sector	0,104	0,107	0,039	0,976	0,330	0,961	1,041
	EH	-0,069	0,054	-0,052	-1,265	0,207	0,934	1,071
	BP	0,109	0,041	0,110	2,621	0,009	0,893	1,120
	PBC	0,266	0,060	0,206	4,410	0,000	0,715	1,398
	ATB	0,497	0,052	0,442	9,583	0,000	0,736	1,358

a. Dependent Variable: EI

4.7 Parallel multiple mediation analysis

The loss of significance of EH as a predictor of EI on the addition of stronger motivational antecedents alluded to the possibility of an indirect effect of EH on EI. Therefore, mediation analysis was used to assess the mediating effect of the cognitive antecedents on the relationship between perceived environmental hostility and entrepreneurial intentions. The PROCESS tool in SPSS, which uses a regression-based approach to mediation, was used to assess the relationships using the model 4 algorithm (Hayes, 2018). A parallel multiple mediator model was run using EH as the predictor, EI as the outcome and three mediators – ATB, BP and PBC. The control variables were added into the model as covariates. EH was modelled as influencing the outcome variable EI through 4 pathways, one directly as well as three indirectly through the mediators – ATB, BP and PBC – with the prerequisite that no mediator inadvertently influenced another. The indirect pathways are referred to as specific indirect effects. When added together, the specific indirect effects yield the total indirect effect of EH on EI through all the mediators in the model (Hayes, 2018).

The parallel multiple mediator model output is summarised in Table 8, and the complete results are in Table 12 in Appendix C. The direct effect between EH and EI is not statistically different from zero ($c' = -0.069$, $p > .05$) as the confidence interval estimate ($-.176$ to $.038$) includes zero, so zero cannot be confidently ruled as a plausible value for the direct effect of EH on EI. Therefore, there is no evidence of a direct association between EH and EI.

The 95% bootstrap confidence interval for the indirect effects of EH on EI through the mediators ATB, BP and PBC, using 10000 bootstrap samples is entirely above zero. This supports the conclusion that ATB, BP and PBC collectively mediate the effect of EH on EI.

Table 8. Parallel mediation model summary

Direct effects				
		Coefficient	<i>p</i> -value	95% Confidence interval
EH → ATB	<i>a1</i>	-0.137	0.023	-0.254 to -0.019
EH → BP	<i>a2</i>	-0.206	0.003	-0.340 to -0.072
EH → PBC	<i>a3</i>	-0.192	0.000	-0.294 to -0.091
ATB → EI	<i>b1</i>	0.497	0.000	0.395 to 0.599
BP → EI	<i>b2</i>	0.109	0.009	0.027 to 0.190
PBC → EI	<i>b3</i>	0.266	0.003	0.145 to 0.683
EH → EI	<i>c'</i>	-0.069	0.238	-0.176 – 0.038

Indirect effects			
		Coefficient	95% Confidence interval
EH → ATB →EI	<i>a1b1</i>	-0.068	-0.126 to -0.015
EH → BP →EI	<i>a2b2</i>	-0.022	-0.051 to -0.003
EH → PBC →EI	<i>a3b3</i>	-0.051	-0.095 to -0.017

Pairwise comparisons of specific indirect effects Table 12 (Appendix C) depicted confidence intervals that straddle zero. Therefore, there is insufficient evidence to support that the specific indirect effects are statistically different from each other. The control variables gender, business experience and family history had significant associations with the mediator and outcome variables as depicted in figure with the complete parallel mediation model.

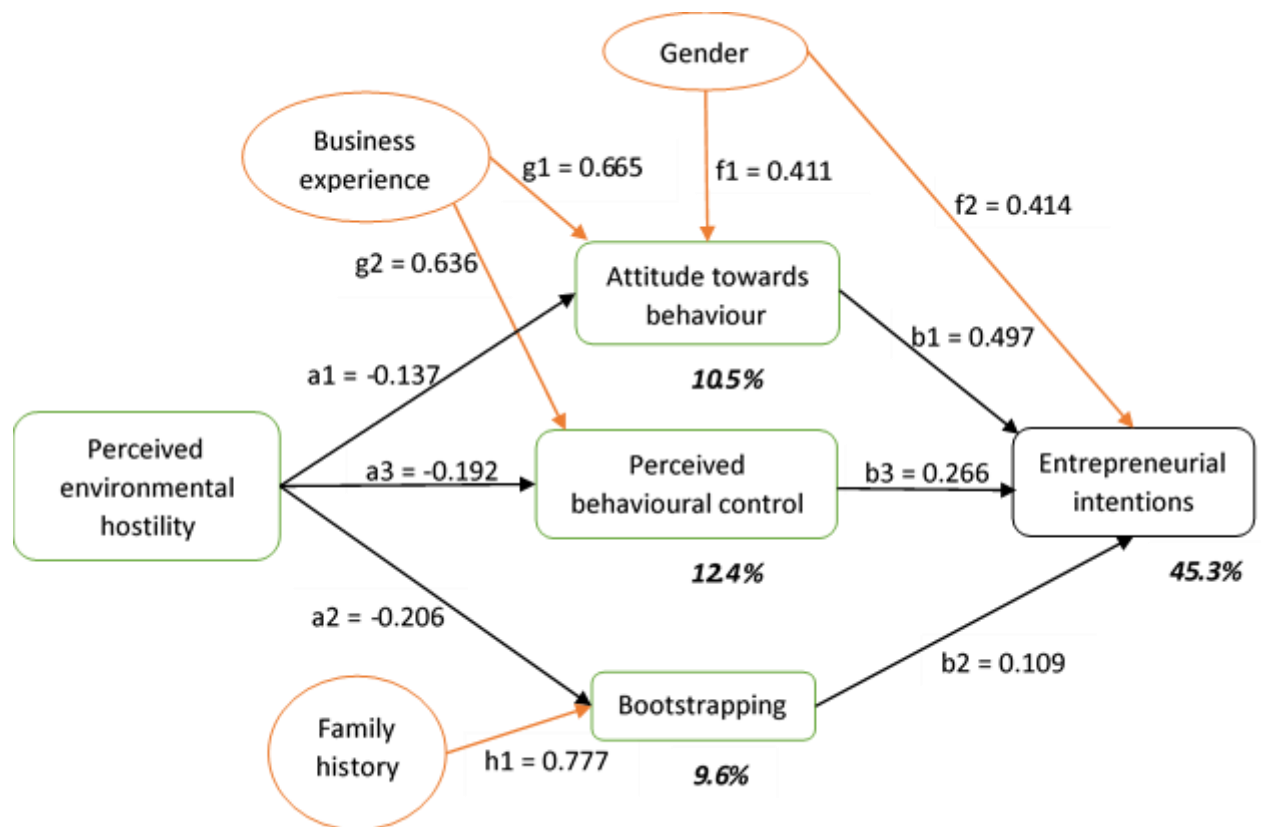


Figure 14. Parallel mediation model

Source: Results from primary data

4.8 Results pertaining to Hypothesis 1

Hypothesis 1: The entrepreneurial intention of employed pharmacists in South Africa is positively related to ATB ($H1a$), BP ($H1b$) and PBC ($H1c$).

EI was analysed using IEIS developed by Thompson (2009) and four items that measured behaviours strongly implying intentions were retained as a factor – learning about starting a firm; looking for business opportunities and saving resources to start a firm. The level of EI amongst pharmacists was moderate. ATB was analysed using a scale developed by Liñán and Chen (2009), and four items were retained as a factor related to entrepreneurship is an attractive, desirable, and highly satisfying career to be pursued given the opportunity and resources. The level of ATB was high amongst the respondents. Bootstrapping was analysed using a scale developed by Zhang and Cain (2017), and three items were retained, recognising friends, family, and colleagues as sources for

financial and non-financial support in business start-ups. The level of bootstrapping was expectedly low. PBC was analysed using a scale developed by Liñán and Chen (2009), and three items were retained as a factor related to the possession of knowledge of how to start and establish a thriving enterprise with ease. The level of PBC was moderately high.

Hypothesis 1a: Using the results of correlation analysis, ATB had a statistically significant positive relationship with EI of a large effect size ($r = 0.596$; $p < 0.01$). Hierarchical regression model showed that ATB significantly predicts 14.8% of the variance in EI ($\Delta R^2 = 0.148$; $p < 0.01$) as a one-unit increase in ATB results in a 0.497 unit increase in EI ($b = 0.497$; $p < 0.01$). Therefore, the results provide statistically significant support for hypothesis 1a.

Hypothesis 1b: The results of the correlation analysis showed a statistically significant positive relationship between BP and EI of a small effect size ($r = .201$; $p < 0.01$). Hierarchical regression model showed that BP marginally predicts 2.3% of the variance in EI ($\Delta R^2 = 0.023$; $p < 0.01$) as a one-unit increase in BP results in a 0.109 unit increase in EI ($b = 0.109$; $p < 0.01$). Therefore, the results provide statistically significant support for hypothesis 1b.

Hypothesis 1c: The results of the correlation analysis showed a statistically significant positive relationship between PBC and EI of a moderate effect size ($r = .482$; $p < 0.01$). Hierarchical regression model showed that PBC significantly predicts 13.4% of the variance in EI ($\Delta R^2 = 0.134$; $p < 0.01$) as a one-unit increase in PBC results in a 0.266 unit increase in EI ($b = 0.266$; $p < 0.01$). Therefore, the results provide statistically significant support for hypothesis 1c.

In conclusion, hypothesis 1 was accepted at statistically significant levels of $p < 0.01$.

4.9 Results pertaining to Hypothesis 2

Hypothesis 2: The entrepreneurial intentions of employed pharmacists in South Africa are inversely related to perceived environmental hostility.

EH was analysed using a scale adapted from a study conducted by Urban (2010) and three items related to high levels of risk, high competitive intensity and high failure rates were retained. The level of EH was high amongst the respondents.

Using the results of correlation analysis, EH had a statistically significant negative relationship with EI of a small effect size ($r = -.183$; $p < 0.01$). The hierarchical regression model showed that EH significantly predicts 2.5% of the variance in EI ($\Delta R^2 = 0.025$; $p < 0.01$) when it is paired with weak predictors such as BP. However, the overall hierarchical regression model shows EH negatively predicts EI, albeit in a non-significant manner ($b = -0.052$; $p > 0.05$). Therefore, the results provide partial support for hypothesis 2.

In conclusion, hypothesis 2 was partially accepted as EH was inversely related to EI.

4.10 Results pertaining to Hypothesis 3

Hypothesis 3: The relationship between environmental hostility and entrepreneurial intentions of employed pharmacists in South Africa is mediated by their attitude towards behaviour (*H3a*), bootstrapping (*H3b*) and perceived behavioural control (*H3c*).

Hypothesis 3a: The results of the parallel mediation model show that a one unit increase in EH will reduce EI by 0.068 ($a_1b_1 = -0.068$; $p < 0.01$) as a result of a small negative effect of EH on ATB ($a_1 = -0.137$; $p < 0.01$) which in turn produces variation in EI ($b_1 = 0.497$; $p < 0.01$). In conjunction with the control variables gender and previous business experience, EH explains 10.5% variance in ATB ($R^2 = 0.105$; $p < 0.01$). The indirect effect of EH on EI through ATB is statistically significant lending support to hypothesis 3a.

Hypothesis 3b: The results of the parallel mediation model show that a one unit increase in EH will reduce EI by 0.022 ($a_2b_2 = -0.022$; $p < 0.001$) as a result of a small negative effect of EH on BP ($a_2 = -0.206$; $p < 0.01$) which in turn produces variation in EI ($b_2 = 0.109$; $p < 0.01$). In conjunction with the control

variable family history, EH explains 9.6% of the variance in BP ($R^2 = 0.096$; $p < 0.01$). The indirect effect of EH on EI through BP is statistically significant lending support to hypothesis 3b.

Hypothesis 3c: The results of the parallel mediation model show that a one unit increase in EH will reduce PBC by 0.051 ($a_3b_3 = -0.051$; $p < 0.01$) as a result of a small negative effect of EH on PBC ($a_3 = -0.192$; $p < 0.01$) which in turn produces variation in EI ($b_3 = 0.266$; $p < 0.01$). In conjunction with the control variable business experience, EH explains 12.4% of the variance in PBC ($R^2 = 0.124$; $p < 0.01$). The indirect effect of EH on EI through PBC is statistically significant lending support to hypothesis 3c.

The direct effect of EH on EI was negative but statistically insignificant ($c' = -0.069$; $p > 0.05$). The parallel mediation model shows that EH influences EI indirectly through the collective and complete mediating effects of ATB, BP and PBC. The total indirect effect of EH shows that a one-unit increase will reduce EI by 0.142 ($a_1b_1+a_2b_2+a_3b_3 = -0.142$; $p < 0.01$) through the mediating effects of ATB, BP and PBC. In conclusion, hypothesis 3 was accepted at statistically significant levels of $p < 0.01$.

4.11 Summary of the results

The study started with an initial sample size of 360, characterised by a majority of females (62%). The sample consisted of employed pharmacists who were mostly between the ages of 25 and 34 and had under ten years of work experience. The respondents mostly practised in the private sector and had no previous business experience. Most of them had a history of family business (58%).

The objective of the study was to determine the entrepreneurial intentions of pharmacists as predicted by perceived environmental hostility and its motivational antecedents – ATB, BP and PBC. The constructs were captured by way of a 22-item Likert scale questionnaire. The reliability and validity of the items used were tested to establish a reliable factor structure of the hypothesised conceptual model. After performing exploratory factor analysis, a

survey framework of 17 items with five factors, four predictors and one outcome variable was produced. Two scales EH and PBC proved to be moderately reliable with Cronbach $\alpha > 0.5$ while the other three scales were highly reliable with $\alpha > 0.7$.

Correlational analysis was used to quantify the strength, size, direction, and significance of the relationships between the outcome and predictor variables (Field, 2013). It was evident that attitude towards behaviour had the most robust relationship with entrepreneurial intentions, followed by perceived behavioural control, then bootstrapping and lastly, perceived environmental hostility. Two control variables gender (coded "1" male; "0" female) and previous business experience (coded "1" yes; "0" no) had statistically significant positive relationships with EI. Males and pharmacists who had previous business experience had statistically significant higher scores in EI at $p < .001$.

Hierarchical regression analysis indicated that ATB had the most robust predictive capacity, followed by PBC and then BP, all with significant unstandardised regression coefficients. The results significantly supported hypothesis 1. It was also evident that the model's predictive power improved when control variables are included in the regression equation to explain 45% of the variance in EI.

An inverse relationship between EI and EH was supported as a low perception of environmental hostility had a positive relationship with entrepreneurial intentions, albeit of small effect. The correlation analysis thus supported hypothesis 2. However, EH lost its significance in predicting EI when the hierarchical regression model was run to include the strong predictors – ATB and PBC.

Parallel mediated regression analysis was performed to evaluate the mediating effects of the motivational antecedents – ATB, BP and PBC – on the relationship between EH and EI. The indirect effects of EH on EI through the mediators ATB, BP and PBC, were statistically significant supporting hypothesis 3 that ATB, BP and PBC collectively mediate the effect of EH on EI.

CHAPTER 5: DISCUSSION OF THE RESULTS

5.1 Introduction

This chapter seeks to summarise the findings presented in Chapter 4 and provide an overview interpretation of the results drawing the study to its conclusion. It commences with the theoretical framework of the study; after that, the discussion interprets the results obtained from descriptive statistics and regression analysis used to test the hypotheses.

5.2 Demographic profile of respondents

There was a greater representation of females amongst the respondents. This corresponds with SAPC statistics which show that 63.7% of the pharmacy profession is represented by women (South African Pharmacy Council, 2020). Generally, women outnumber men in healthcare sciences, with some countries having 75% of their healthcare workforce comprising women (Bukonda, Chand, Disashi, Lumbala, & Mbiye, 2012).

Interestingly, gender differences manifested in the variables measured as men exhibited higher levels of EI, ATB and PBC. This was expected as men are more entrepreneurial activity than women (Bosma & Kelley, 2018). This can be attributed to obstacles women face such as higher levels of domestic responsibility, lack of female entrepreneurial role models and culturally induced lack of perceived entrepreneurial self-efficacy that stifle the development of positive attitudes towards venturing and its associated entrepreneurial intent (Santos, Roomi, & Liñán, 2016). In a profession with over 60% female dominance, it is worrisome to find a negative association between EI and women. Nonetheless, the overall level of EI was higher than expected, considering the low levels of EI (11.7%) that are consistently reported in the GEM report (Herrington & Kew, 2018).

A majority of the respondents (80%) were under the age of 35. This is in line with age demographics reported by StatsSA (2019), which show that 72% of the

population is under the age of 35. The young age demographics of the sample, in turn, correlated with the level of work experience as 79% of the respondents had under ten years of work experience.

A minority of the respondents had previous business experience. The low levels of business experience corresponds with a minority of respondents over the age of 35 who may have participated in entrepreneurial activity when they were between the ages of 25 to 34, an age group that has been identified as the most entrepreneurially active globally (Bosma & Kelley, 2018). Participating in entrepreneurship at that age offers an opportunity to return to income-generating professional work if the venture fails (Bosma & Kelley, 2018). Individuals who had previous business experience were found to have higher levels of EI, ATB, and PBC than respondents without business exposure.

Most of the respondents are in private sector employment. This corresponds with SAPC statistics which show that 29% of pharmacists work in the public sector and 63% are in the private sector (International Pharmaceutical Federation, 2012).

Nonetheless, the overall level of EI and PBC were higher than expected, considering the low levels of EI (11.7%) and perceived capability that are consistently reported in the GEM report (Herrington & Kew, 2018). High levels of ATB were recorded which correspond with GEM reports despite the bleak economic outlook South African businesses face in the near term as profit margin ratios of SA businesses have declined from 11 cents per Rand in 2005 to only 5 cents per Rand in 2017 (Stats SA, 2019).

Most of the respondents had family members that are in business. This is expected since the most predominant form of business globally is family owned/managed with conservative estimates placed at 65% of all global enterprises (Visser & Chiloane-Tsoka, 2014).

5.3 Relationship between motivational antecedents and EI

Hypothesis 1: The TPB determinants of (a) attitude towards behaviour, (b) bootstrapping and (c) have a positive relationship with entrepreneurial intentions of pharmacists who are employed but not self-employed.

Using hierarchical regression methods, ATB, BP and PBC were found to be applicable in predicting EI, lending confirmatory support for TPB as a significant predictor of EI (Gird & Bagraim, 2008). The model explained 33% of the variance in EI synonymous to previous findings, as Liñán and Chen (2009) noted that linear models tend to explain less than 40% of the variance in the outcome. Previous research in SA show variability in predictive capacity of TPB. Urban & Chantson, (2019) found TPB to explain a large proportion (77%) of variance in EI amongst scientists and researchers. Gird and Bagraim (2008) found a variance of 27% amongst final-year commerce students, similar to the results obtained in the current study. The variability can be attributed to differences in context and measurement of the independent and dependent variables (Ajzen, 2002; Liñán & Chen, 2009).

Demographic variables gender and previous business experience had significant residual effects as they predicted EI by a further 12% to give an integrated model explaining 45% of the variance in EI. The confounding effects of the external variables beyond the focal predictors within the TPB framework imply that other salient external variables impact EI but are unaccounted for within the theory (Gird & Bagraim, 2008).

A closer look at the significance of the determinants coefficients supports hypotheses 1a, 1b and 1c. ATB was found to be the most influential predictor followed by PBC and finally, BP. In order to enhance pharmacist's entrepreneurial intent, a more favourable attitude towards venturing is more critical than their perceived entrepreneurial ability or the potential to receive support from important referents. Previous research efforts in SA have found similar results with regards to the sequence of effect sizes of the determinants (Gird & Bagraim, 2008; Malebana, 2014). Urban and Chantson (2019) found ATB to be the strongest predictor of EI with a large effect size of 0.72. The GEM

reports on SA consistently report higher levels of attitudes towards entrepreneurship as a "good career choice" in comparison to reported levels of perceived entrepreneurial capabilities (Herrington & Kew, 2018). Similarly, the observed levels of ATB were higher than the PBC in the study. It is, therefore, not surprising to observe ATB having a more substantial influence on EI than PBC.

However, previous international research efforts place greater emphasis on PBC as the salient predictor of EI (Krueger, *et al.*, 2000; Autio, Keeley, Klofsten, Parker, & Hay, 2001). ESE, a construct related to PBC, was found to explain 18% of the variance in EI amongst pharmacists (Odumosu, 2014). The result is similar to the current since adding PBC to the hierarchical regression model increased the model's predictive capacity by 13.4%. The moderately low predictive capacity Odumosu (2014) observed can be attributed to the exclusion of salient variables such as ATB. The similarities in findings amongst studies conducted in SA could be due to cultural similarities amongst the respondents (Urban & Chantson, 2019).

A selective interpretation of the SA GEM report would negate the consistently low EI levels representing a disconnect with high levels of ATB and perceived capabilities reported in SA (Herrington & Kew, 2018). The incongruencies can be attributed to the assigning of timeframes to EI in the GEM report while the current study does not assign EI to timeframes. Thompson (2009, p.679) argues that "asking about the likelihood of starting a new firm within specific and short time periods" precludes students and employees who are at the start of their careers and have not developed the necessary human, social and financial capital for entrepreneurial endeavours. Therefore, to increase the general applicability of the study, timeframes were not assigned to the outcome variable EI.

Bootstrapping had an impact on EI lending support to hypothesis 1c. An individual's ability to obtain and leverage necessary tangible and intangible resources (human, social and financial) from important referents influences EI (Zhang & Cain, 2017). The acquisition of resources is indispensable to the process of new venture creation as previous research efforts have shown that

the availability of financial capital is positively associated with self-employment preferences (Lüthje & Franke, 2003; Maula, Autio, & Arenius, 2005). When pharmacists believe that they will receive support for their entrepreneurial endeavour from important referents (family, friends, and colleagues), such a supportive environment enhances the development of EI. This reflects social norms in an environment that approve of entrepreneurial activity which have been positively associated with EI in previous studies (Schlaegel & Koenig, 2014; Santos, Roomi, & Liñán, 2016). The finding is similar to a study conducted by Zhang and Cain (2017), which found a direct impact between bootstrapping financing potential and EI, albeit of a lower extent in comparison to ATB and ESE.

Interestingly, the current study demonstrated that bootstrapping was positively associated with a family history of entrepreneurship. This corresponds with previous research efforts which show that individuals with a familial history of entrepreneurship are likely to receive human, social and financial support for their planned venture, which in turn enhances the development of EI (Carter & van Auken, 2005; Kibler, 2013). However, bootstrapping had the smallest effect on EI with a limited predictive capacity of 2.3%. Furthermore, BP had the lowest level observed amongst all variables. This calls into question the importance of BP as a predictor of EI irrespective of its positive association with entrepreneurial familial history. Previous research efforts have argued that acquiring resources through strong network ties entails obligations that have reciprocity demands and normative pressures to support the network at the potential detriment of the planned venture (Sieger & Minola, 2017). This is particularly poignant in the socio-cultural institution of Ubuntu – a strong form of collectivism – whereby the potential acquisition of informal investments creates social obligations such as employing extended family members that interfere with market principles (Zoogah, Peng, & Woldu, 2015). Therefore, the potential availability of support from important referents could impede the development of EI due to considerations of future social burdens. Nonetheless, hypothesis 1c was supported albeit to a limited extent.

5.4 Direct relationship between EH and EI

Hypothesis 2: The entrepreneurial intentions of employed pharmacists in South Africa are negatively related to perceived environmental hostility.

Hypothesis 2 posited that as pharmacists interpret and make sense of their environments, the lower the level of environmental constraints, the more likely they are to perceive that it will be possible to compete and acquire resources for future planned ventures. The perceptual domain of the environmental hostility was used in the study as it emanates from previous research efforts that show that it is not objective environmental factors that drive decision making, but individuals make decisions based on subjective assessments of the environment (Nabi & Liñán, 2013). Based on the negative considerations of the environment, individuals may not start a new venture because a range of barriers are becoming hostile to entrepreneurial activity (Barbosa, Kickul, & Liao-Troth, 2007). GEM reports have mentioned several factors which could adversely influence the development of intentional entrepreneurs. These being the high levels of bureaucracy, onerous labour regulations, disruptions due to civil unrest, strikes, levels high levels of corruption and the uneven market competitive environment (Herrington & Kew, 2018).

Hypothesis 2 was rejected as EH was found to have insignificant predictive effect on EI. The results contradict Lüthje and Franke's (2003) findings who found perceived environmental hostility for business founders to be directly linked to suppression of entrepreneurial intent, irrespective of the students' attitude towards venturing. Nabi & Liñán (2013) observed that if the economic context is considered hostile individuals are likely to have strong EI

In a study that conceptualized opportunity as resource availability, customer demand and ability to compete, perceived environmental munificence – a construct related to EH – be insignificant in predicting the pursuit of entrepreneurial opportunities (Edelman & Yli-Renko, 2010). Prior research findings lend support to the current study as it was argued that potential entrepreneurs act as “bricoleurs” who bootstrap and innovate to overcome constraints inherent in hostile environments (Edelman & Yli-Renko, 2010).

A closer examination of the hierarchical regression models shows that the strength and significance of EH as a predictor of EI was lost upon inclusion of the influential predictor variables – ATB and PBC – suggesting a possibility of mediation effects. Ajzen (2002) posits that external factors indirectly impact entrepreneurial intentions by influencing the determinants in TPB. Mediation effects are explored in hypothesis 3.

5.5 Indirect relationship between EH and EI

Hypothesis 3: The relationship between environmental hostility and entrepreneurial intentions of employed pharmacists in South Africa is positively mediated by their attitude towards behaviour (*H3a*), bootstrapping (*H3b*) and perceived behavioural control (*H3c*).

The effect of EH on EI was mediated entirely by the three determinants – ATB, BP and PBC – lending support to hypothesis 3. Previous research efforts have shown that external variables transmit their effects to EI by influencing the three motivational antecedents (Nabi & Liñán, 2013). This is in line with TPB, as external environmental factors expectedly do not influence intentions directly but indirectly by affecting the beliefs and perceptions necessary to develop the motivational antecedents – ATB, BP and PBC – which in turn influence EI (Ajzen, 2002).

The mediating effect of determinants is likely due to the changing nature of the environment, which signals the emergence of opportunities and threats in the environment (Edelman & Yli-Renko, 2010; Giordano Martínez, Herrero Crespo, & Fernández-Laviada, 2017). Environmental changes trigger subsequent changes in perceptions and beliefs related to attitude, behavioural control, and bootstrapping potential, which in turn impact EI. The environment influences cognitive development as perceiving environmental hostility as a threat negatively affects the behavioural, control and normative beliefs towards entrepreneurship (Nabi & Liñán, 2013).

ATB receives support as the first mediator between EH and entrepreneurial intention. EH significantly and negatively reduces ATB which, at the same time,

significantly and positively enhances entrepreneurial intention. An individual's perception of whether one's environment supports or discourages entrepreneurship affects one's attitude, which in turn impacts EI. In environments that are perceived to be hostile to entrepreneurship, individuals are expected to base their decision-making process on the probability of achieving future outcomes weighed against the value attached to the outcomes (Giordano Martínez, Herrero Crespo, & Fernández-Laviada, 2017). In hostile environments, the anticipated odious process of resource acquisition and competing against incumbents undermines the desirability of entrepreneurship, which in turn negatively impacts EI (Odumosu, 2014). Individuals might not start a business because the economic context is considered hostile, regardless of holding a positive attitude about entrepreneurship (Lüthje & Franke, 2003). The results in the study do not support Lüthje & Franke's (2003) findings as EH was found to influence EI indirectly by reducing ATB negatively.

PBC receives support as the second mediator between EH and EI as EH significantly and negatively reduces PBC which, at the same time, significantly and positively enhances entrepreneurial intention. A hostile evaluation of the environment enhances an individual's uncertainty about their capabilities to explore and exploit entrepreneurial opportunities which heightens the probability of failure in planned ventures (Nabi & Liñán, 2013). Invariably, an individual who believes that they will be unable to overcome environmental constraints will have lower levels of EI. Kibler (2013) demonstrated EH undermines an entrepreneurship-friendly environment, in turn, discouraging perceived capabilities and opportunity recognition, which ultimately adversely influence EI. The results of the study support previous research efforts as higher perceived self-efficacy has been demonstrated to mediate the relationship between EH and EI (Mwiya, Wang, Kaulungombe, & Kayekesi, 2019).

BP was supported as a mediator of the relationship between EH and EI. EH was negatively related to BP, which in turn was positively related to EI. An individual embedded in an environment hostile to entrepreneurial activity will have subdued beliefs in the potential of receiving approval and support for starting up a business from their important referents (Shirokova, Osiyevskyy, &

Bogatyreva, 2016). Similarly, previous research efforts have demonstrated that when resources are perceived to be available, potential entrepreneurs are less likely to be concerned about environmental constraints and are thus likely to engage in the venture creation process, regardless of the resources the founder controls (Edelman & Yli-Renko, 2010). Therefore, the findings show that a lower perception of market threats and more significant potential for acquiring start-up capital positively impact EI among employed pharmacists (van Gelderen, Thurik, & Bosma, 2005).

Furthermore, the integrated parallel mediation model showed that prior business experience was indirectly related to EI. Individuals with prior business experience can negotiate the pairing of perceived venture desirability and feasibility as they frame the causal interaction between personal and environmental factors (Schenkel, D'Souza, & Braun, 2014). The finding is supported by Odumuso (2014) who found prior entrepreneurial exposure to be a positive predictor of EI amongst pharmacists.

5.6 Conclusion

Based on the literature reviewed in chapter 2, hypotheses were developed to determine the entrepreneurial intentions of pharmacists as predicted by perceived environmental hostility and its motivational antecedents – ATB, BP and PBC. The relationships that exist between EI and the predictor variables were evaluated using correlation analysis. Furthermore, hierarchical regression analysis was performed to assess the magnitude of each antecedent in predicting EI amongst pharmacists. The results indicated a positive and significant association between the cognitive determinants – ATB, BP and PBC – and EI consequently supporting hypotheses 1a, 1b and 1c.

The correlation analysis gave evidence to a significant negative association between EH and EI. However, EH became a non-significant predictor of EI when strong predictors – ATB and PBC – were incorporated into the regression model. The result rejected EH as a direct predictor in turn rejecting hypothesis 2.

The indirect effect of EH on EI through the intervening variables – ATB, BP and PBC – was then evaluated using parallel mediation regression analysis. The results indicated that EH is indirectly related to EI through its relationship with ATB, BP and PBC supporting hypothesis 3. EH does not affect EI independent of the mediators as its effects are completely transmitted through multiple mechanisms of causal influences on the cognitive aspects ATB, BP and PBC. Pharmacists who had high levels of perceived EH lowered their levels of attitude towards venturing, perceived potential of bootstrapping and perceived behavioural control subsequently lowering their entrepreneurial intent.

The implications of empirical findings are explored in further detail in Chapter 6.

CHAPTER 6: CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter summaries the research objectives, findings, and conclusions of the study. The contribution of the study and recommendations are presented after that.

6.2 Conclusions of the study

The level of expansion of pharmaceutical services spearheaded by corporates has faltered in meeting the demands of a young and expanding South African population (Ward *et al.*, 2014). This has been coupled by the closure of independent pharmacies that have been traditionally established in underserved areas such as townships. Entrepreneurship is envisaged as a critical enabler in addressing challenges of pharmaceutical service delivery (Bukonda *et al.*, 2012). As the first step in entrepreneurial activity, it is therefore fitting to examine the extent of entrepreneurial intentions amongst pharmacists as a signal for potential entrepreneurs that can advance efforts to increase access to pharmaceutical services. Pharmaceutical service industry is highly regulated, greatly influencing the ease of doing business and barriers to entry (Wessels & Luiz, 2003; (Ward *et al.*, 2014). It will be, therefore, erroneous to examine entrepreneurial intentions in isolation without considering the second-order force of entrepreneurship – the environment. As evidenced by the closure of independent pharmacies, it is important to examine the influence of perceived environmental hostility on entrepreneurial intentions.

The research objective was to determine the extent to which TPB predicts the level of EI among pharmacists. The antecedents ATB, PBC and a modified version of subjective norms, BP were adopted in the study as the cognitive determinants of EI. Ajzen (2002) suggests that external variables do not influence EI directly but indirectly through the mediating effects of the cognitive

determinants. Therefore, the overarching research objective was to determine the extent to which the Theory of planned behaviour can be used to explain the relationship between perceived environmental hostility and entrepreneurial intentions as mediated by the cognitive antecedents – ATB, BP and PBC.

Hypothesis 1 was supported as the TPB model was shown to be applicable for predicting pharmacists EI, albeit of a moderate level. Using regression as the primary statistical technique, the three determinants of EI in the TPB explained 33% of the variance in entrepreneurial intentions. Demographic variables improved the predictability of EI to 45%. Previous research supports the relative sequence of importance ATB, PBC and BP contribute to predicting EI in the model of TPB (Urban & Chantson, 2019). The relative importance of BP in predicting EI supports the notion that genuine endorsement of start-up activity by important referents is reflected in their potential to provide support be it financial or non-financial (Zhang & Cain, 2017).

Hypothesis 2 was rejected as environmental hostility did not exert a direct predictive effect on EI. Nonetheless, hypothesis 3 was accepted. EH influences EI indirectly by affecting the motivational antecedents. The results build on existing evidence of the mediating effect of cognitive determinants on the relationship between EI and external variables, demonstrating the generalisability of the TPB (Gird & Bagraim, 2008).

6.3 Implications and Recommendations

This study provides empirical findings that contribute to the understanding of how the environment affects the development of EI among pharmacists in SA. The results support the findings of previous research that environmental influences such as hostility indirectly impact EI by the mediating effects of the motivational antecedents – ATB, BP and PBC (Nabi & Liñán, 2013). The study adds to the existing body of research that highlights the salient role individual and environmental factors play in influencing the preconception phase of entrepreneurship particularly in under-researched countries such as SA (Malebana, 2014; Urban & Chantson, 2019). A singular focus on a specific

industry improves consistency in results since the influence of environmental hostility operates under varying industry conditions (Urban, 2010).

Previous research efforts have shown mixed evidence of the direct effect of subjective norms (SN) on EI. However, the research report found the modified version of subjective norms – bootstrapping – to be a significant predictor of entrepreneurial intention. Future studies may consider using bootstrapping as a proxy for subjective norms in TPB. This study adds to the existing body of work on EI by incorporating a working adult population of health professionals, as most studies on EI have been targeted at students (Liñán & Fayolle, 2015).

The information gathered in this research helps inform policy on how to enhance the entrepreneurial participation of pharmacists under the broader context of increasing access to pharmaceutical services in SA. Improving access to medicine is complex, and as reported in the study, a moderate level of entrepreneurial intent weakens the prospect of creating jobs and increasing the footprint of pharmacies through individual entrepreneurial behaviour of pharmacists (Odumosu, 2014). The results suggest that the potential to bootstrap from important referents is low. Considering SA's history of apartheid, there is a high probability of the individuals being the first graduates in their families and are consequently expected to support their families under the pretext colloquially term 'black tax.' Government assistance programs could play a pivotal role in assisting pharmacists bootstrapping efforts incentivising potential entrepreneurs to create new ventures (Herrington & Kew, 2018).

The environment plays a pivotal role in generating a pool of potential entrepreneurs identified by high levels of entrepreneurial intent. A hostile environment is not conducive to entrepreneurial activity, as it indicates a general lack of exploitable opportunities and resources (Urban, 2010). Moreover, it is the perception and not literal environmental hostility that influences entrepreneurial intentions. Perceptions can be changed, therefore educating pharmacists on the opportunities that regulation changes have brought to the fore have the potential of reducing perceptions of environmental hostility, subsequently improving entrepreneurial intentions (Nabi & Liñán, 2013; Schenkel, D'Souza, & Braun, 2014). For example, the reinstatement of Section

22(A) permits improved pharmacists' prospects of diversified income streams, greater responsibilities and enhanced status as authorised prescribers remunerated for their comprehensive professional health services to the public whether the medicine has been sold or not (Ward *et al.*, 2014).

The research revealed that pharmacist's attitude towards venturing is the most important determinant of entrepreneurial intentions. A positive attitude towards venturing contributes largely to EI, and this can be attributed to high status afforded to successful entrepreneurs emanating from high media coverage of entrepreneurship (Singer, Herrington, & Menipaz, 2018). However, women reported moderate to low levels of EI, ATB and PBC. This is worrisome considering the dominance of women in the profession. Low levels of female entrepreneurship hamper the efforts to improve access to medicines through innovation and new venture creation. Perhaps profiling female entrepreneurs through media channels may provide role models women may identify with, consequently fostering positive perceptions of capabilities and attitudes towards venturing (Laviolette, Rabu Lefebvre, & Brunel, 2012).

Individuals that had prior business reported high levels of EI, ATB and PBC. The results suggest a possibility of increasing the pool of potential entrepreneurs to address the challenge of inequitable access to medicine by investing the human capital input of experience (Schenkel, D'Souza, & Braun, 2014). There needs to be a concerted effort to expose pharmacists and pharmacy students to entrepreneurial skills which can be in the form of start-up experience in innovation competitions. This is consistently supported in entrepreneurship literature, maintaining that entrepreneurship education coupled with relevant experience boosts perceived behavioural control, consequently increasing the perceptions of the feasibility and desirability of starting a new venture (Odumosu, 2014; Santos, Roomi, & Liñán, 2016).

6.4 Limitations and suggestions for further research

The limitations of the study relate to generalisability since the sample was dominated by pharmacists in the private sector which might pose a challenge when generalising to those practising in the public sector and non-governmental

organisations. Moreover, the study omits control for the influence of the different sectors of pharmacy – academia, hospital pharmacy, industrial pharmacy, and community pharmacy – which have the potential to contribute significantly to the predictive capacity of EI in pharmacists. Future research efforts in pharmacy entrepreneurship should consider controlling for differences in sectors. With the rapid increase in corporate pharmacy footprint, research in intrapreneurial pharmacists is relevant more than ever (Hohmeier, 2016). Future research efforts should consider intrapreneurial intentions of pharmacists and make comparisons to individual entrepreneurial intentions.

The environment was only assessed with regards to perceived hostility. It will be beneficial for future research to incorporate environmental dynamism as a pertinent external variable that can improve the predictive capacity of EI amongst pharmacists. The research was quantitative in nature; therefore, future research can be qualitative to get deeper insights informing the influence of the environment of EI amongst pharmacists in SA.

The generalisability of results is limited by the cross-sectional nature of the study, which limits the inference of causality of the findings with an acceptable level of confidence. Furthermore, interpretation of findings needs to be conducted carefully as common method, and response biases may be present in a data set of predictor and outcome variables collected using the same instrument. The causality relationship inferred in the mediation analysis, maybe a pathway from the cognitive determinants such as ATB transmitting its influence on EI through other external variables. However, the study was guided by TPB, which suggests that external variables influence the cognitive determinants subsequently influencing EI. Entrepreneurial intention represents potential entrepreneurs; therefore, future studies can consider doing a longitudinal study to capture the intent that is actualised into behaviour. Nonetheless, the results are valid for answering the research question.

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APPENDIX A

Actual Research Instrument

Dear Pharmacist

Welcome to the research study for a master's dissertation at Wits Business School. I am Kudakwashe Sigauke, a Master's in Entrepreneurship and New Venture Creation candidate at the University of Witwatersrand Business School.

The purpose of the study is to examine pharmacists' intentions to start their own business. You will be presented with information relevant to business start-ups and asked to answer some questions. The survey should take you around 10 minutes to complete.

Please be assured that your responses will be kept completely confidential. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason and without any prejudice. You are welcome to contact me, or my supervisor Prof. Boris Urban should you have any questions about the study. Please e-mail me at 361790@students.wits.ac.za or Prof Urban at boris.urban@wits.ac.za. We would be happy to share the outcomes of the completed study with you.

By clicking the button below, you acknowledge that your participation in the study is voluntary, you are 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time for any reason.

☐ I consent, begin the study. ☐ I do not consent; I do not wish to participate.

- | | | | |
|--|--|--|--|
| 1. Are you currently self-employed? | ☐ Yes | ☐ No | |
| 2. What is your gender? | ☐ Male | ☐ Female | ☐ Non-binary |
| 3. What is your age? | ☐ Under 18 | ☐ 19-24 | ☐ 25-34 |
| | ☐ 35-44 | ☐ 45-54 | ☐ 55-64 |
| | ☐ 65-74 | ☐ 75-84 | ☐ 85 or older |
| 4. Indicate your number of years of work experience? | ☐ 0 – 4 years | ☐ 5 – 9 years | ☐ 10 – 14 years |
| | ☐ 15 – 19 years | ☐ 20 – 29 years | ☐ 30 and more years |

5. In which sector do you practice? ☐Public ☐Private ☐Non-governmental organisation

6. Have you ever started and run a business before? ☐Yes ☐No

7. Do any of your family members own a business? ☐Yes ☐No

Thinking of yourself, indicate your level of agreement with following sentences from **1 (total disagreement) to 7 (total agreement)**:

	1	2	3	4	5	6	7
Individual entrepreneurial intent (Thompson, 2009)							
1. I intend to set up a pharmacy business in the future	☐	☐	☐	☐	☐	☐	☐
2. I spend time learning about a pharmacy business.	☐	☐	☐	☐	☐	☐	☐
3. I never search for pharmacy business start-up opportunities.	☐	☐	☐	☐	☐	☐	☐
4. I am saving money to start a pharmacy business	☐	☐	☐	☐	☐	☐	☐
5. I do not read books on how to set up a pharmacy business.	☐	☐	☐	☐	☐	☐	☐
6. I have no plans to launch my own pharmacy business	☐	☐	☐	☐	☐	☐	☐
Attitude towards behaviour (Liñán & Chen, 2009)							
7. I consider starting my own pharmacy business desirable.	☐	☐	☐	☐	☐	☐	☐
8. Being an entrepreneur would give me great satisfaction.	☐	☐	☐	☐	☐	☐	☐
9. If I had the opportunity and resources, I would love to start a pharmacy business.	☐	☐	☐	☐	☐	☐	☐
10. A career as a pharmacy business owner is totally unattractive to me.	☐	☐	☐	☐	☐	☐	☐
Perceived behavioural control (Liñán & Chen, 2009)							

11. To start a business and keep it working would be difficult for me.	☐	☐	☐	☐	☐	☐	☐
12. If I tried to start a pharmacy business, I would have a high chance of succeeding.	☐	☐	☐	☐	☐	☐	☐
13. I believe I will be unable to start a pharmacy business.	☐	☐	☐	☐	☐	☐	☐
14. I know how to develop an entrepreneurial project.	☐	☐	☐	☐	☐	☐	☐
Bootstrapping potential (Zhang & Cain, 2017)							
15. My close family members would provide support to help me start or finance a pharmacy business.	☐	☐	☐	☐	☐	☐	☐
16. My close friends would provide support to help me start or finance a pharmacy business.	☐	☐	☐	☐	☐	☐	☐
17. My colleagues would provide support to help me start or finance a pharmacy business.	☐	☐	☐	☐	☐	☐	☐
Perceived environmental hostility (Urban, 2010)							
18. The failure rate of pharmacy businesses is high	☐	☐	☐	☐	☐	☐	☐
19. My industry is very risky, one bad decision could easily threaten the viability of a business unit	☐	☐	☐	☐	☐	☐	☐
20. Competitive intensity is high in my industry	☐	☐	☐	☐	☐	☐	☐
21. Customer loyalty is low in my industry	☐	☐	☐	☐	☐	☐	☐
22. High profit margins are characteristic of my industry	☐	☐	☐	☐	☐	☐	☐

APPENDIX B

Consistency matrix

To examine the direct and indirect effect of perceived environmental hostility on entrepreneurial intentions through an integrated model							
Aims of research	Literature Review	Hypotheses or Propositions or	Research questions	Variables (Independent and Dependent)	Source of data	Type of data	Analysis
To examine the relationship between the motivational factors in the Theory of planned behaviour and entrepreneurial intentions (EI)	(Thompson, 2009) (Liñán & Chen 2009)	H1a: There is a positive relationship between attitude towards behaviour and EI	To what extent does attitude towards behaviour influence EI	IV1 = Attitudes towards behaviour	Question 7 to 11	Ordinal	Regression Analysis Descriptive Analysis Correlational Analysis
				DV1 = EI	Question 1 to 6		
To examine the relationship between the motivational factors in the Theory of planned behaviour and entrepreneurial intentions (EI)	(Thompson, 2009) (Zhang & Cain, 2017)	H1b: There is a positive relationship between bootstrapping and EI	To what extent does bootstrapping influence EI	IV2 = Bootstrapping	Question 17 to 20	Ordinal	Regression Analysis Descriptive Analysis Correlational Analysis
				DV1 = EI	Question 1 to 6		
To examine the relationship between the motivational factors in the	(Thompson, 2009) (Liñán & Chen	H1c: There is a positive relationship	To what extent does perceived behavioural	IV3 = perceived behavioural control	Question 12 to 16	Ordinal	Regression Analysis Descriptive Analysis

To examine the direct and indirect effect of perceived environmental hostility on entrepreneurial intentions through an integrated model							
Aims of research	Literature Review	Hypotheses or Propositions or	Research questions	Variables (Independent and Dependent)	Source of data	Type of data	Analysis
Theory of planned behaviour and entrepreneurial intentions (EI)	2009)	between perceived behavioural control and EI	control influence EI	DV1 = EI	Question 1 to 6		Correlational Analysis
To examine the relationship between environmental hostility and entrepreneurial intentions (EI)	(Thompson, 2009) (Urban, 2010)	H2: There is a negative relationship between environmental hostility and EI	To what extent does perceived environmental hostility influence EI	IV4 = perceived environmental hostility	Question 21 to 25	Ordinal	Regression Analysis Descriptive Analysis Correlational Analysis
				DV1 = EI	Question 1 to 6		
To examine the mediating effect of the motivational factors in the Theory of planned behaviour on the relationship between perceived environmental hostility and entrepreneurial intentions (EI)	(Thompson, 2009) (Liñán & Chen 2009) (Urban, 2010)	H3a: The relationship between perceived environmental hostility and EI is mediated by attitude towards behaviour.	To what extent does attitude towards behaviour mediate the relationship between perceived environmental hostility and EI	IV4 = perceived environmental hostility	Question 21 to 25	Ordinal	Regression Analysis Descriptive Analysis Correlational Analysis
				DV1 = EI	Question 1 to 6		
				Mediating Variable 1 = Attitude towards behaviour	Question 7 to 11		

To examine the direct and indirect effect of perceived environmental hostility on entrepreneurial intentions through an integrated model							
Aims of research	Literature Review	Hypotheses or Propositions or	Research questions	Variables (Independent and Dependent)	Source of data	Type of data	Analysis
To examine the mediating effect of the motivational factors in the Theory of planned behaviour on the relationship between perceived environmental hostility and entrepreneurial intentions (EI)	(Thompson, 2009) (Zhang & Cain, 2017) (Urban, 2010)	H3b: The relationship between perceived environmental hostility and EI is mediated by bootstrapping potential.	To what extent does bootstrapping potential mediate the relationship between perceived environmental hostility and EI	IV4 = perceived environmental hostility	Question 21 to 25	Ordinal	Regression Analysis Descriptive Analysis Correlational Analysis
				DV1 = EI	Question 1 to 6		
				Mediating Variable 2 = bootstrapping potential	Question 12 to 16		
To examine the mediating effect of the motivational factors in the Theory of planned behaviour on the relationship between perceived environmental hostility and entrepreneurial intentions (EI)	(Thompson, 2009) (Liñán & Chen 2009) (Urban, 2010)	H3c: The relationship between perceived environmental hostility and EI is mediated by perceived behavioural control.	To what extent does perceived behavioural control mediate the relationship between perceived environmental hostility and EI	IV4 = perceived environmental hostility	Question 21 to 25	Ordinal	Regression Analysis Descriptive Analysis Correlational Analysis
				DV1 = EI	Question 1 to 6		
				Mediating variable 3 = perceived behavioural control	Question 21 to 25		

APPENDIX C

Additional data analysis output

Table 9. Communalities after extraction

Communalities		
	Initial	Extraction
EI2	0,562	0,644
EI3R	0,356	0,400
EI4	0,467	0,484
EI5R	0,353	0,494
ATB1	0,649	0,691
ATB2	0,711	0,789
ATB3	0,690	0,774
ATB4R	0,610	0,644
BP1	0,455	0,565
BP2	0,531	0,732
BP3	0,441	0,531
PBC1R	0,261	0,375
PBC2	0,326	0,476
PBC3	0,333	0,412
EH2	0,316	0,433
EH3	0,304	0,572
EH4	0,161	0,209
Average communalities after extraction		0,543
Extraction Method: Principal Axis Factoring.		

Table 10. Kaiser's Criterion of Extracted factors

Total Variance Explained							Rotation Sums of Squared Loadings ^a
Initial Eigenvalues				Extraction Sums of Squared Loadings			
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	
1	5.368	31.574	31.574	4.974	29.260	29.260	4.305
2	2.239	13.173	44.747	1.847	10.866	40.126	3.765
3	1.620	9.530	54.277	1.093	6.430	46.556	2.126
4	1.181	6.947	61.224	.737	4.334	50.890	1.525
5	1.107	6.513	67.737	.574	3.376	54.265	3.019
6	.765	4.499	72.236				

7	.699	4.111	76.347			
8	.641	3.771	80.118			
9	.532	3.128	83.246			
10	.506	2.974	86.220			
11	.458	2.694	88.914			
12	.434	2.554	91.468			
13	.369	2.172	93.640			
14	.314	1.850	95.489			
15	.300	1.762	97.251			
16	.259	1.522	98.773			
17	.209	1.227	100.000			

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

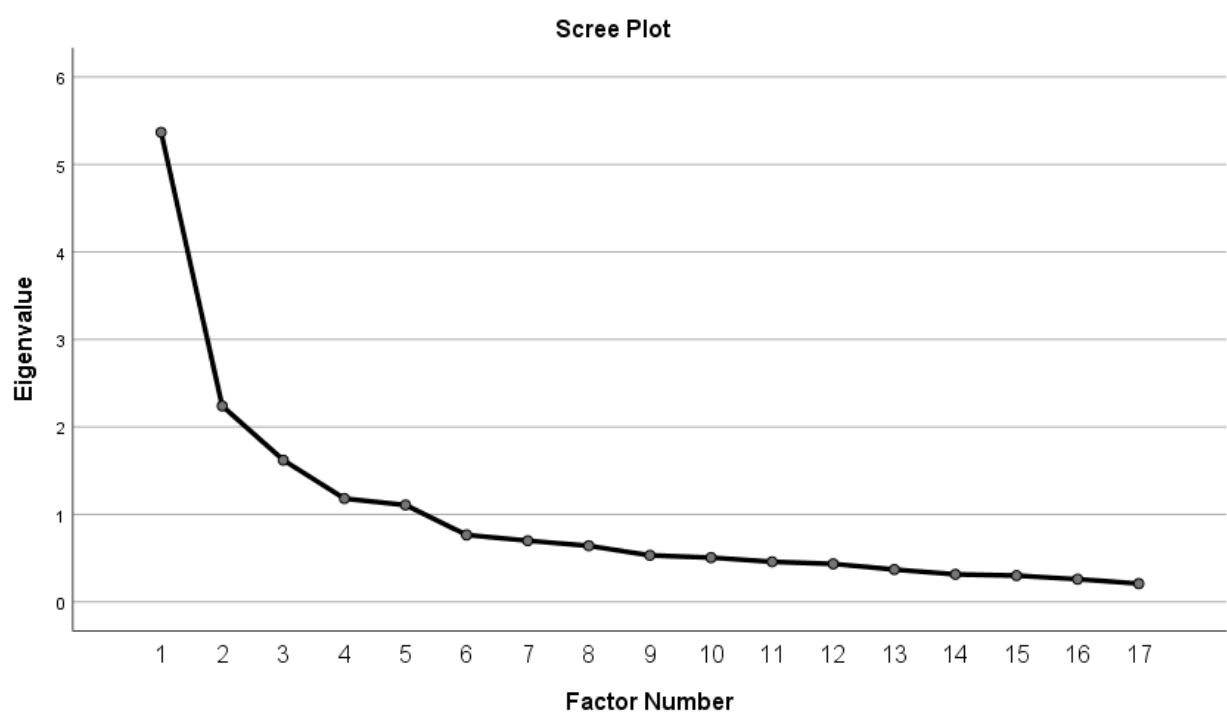


Figure 15. Scree plot

Source: Primary data

Table 11. Coefficients table for Model 1 to 5

Coefficients ^a				
Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
				Collinearity Statistics

		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.883	.464		8.367	.000		
	Gender	.684	.170	.214	4.023	.000	.871	1.148
	Business_Exp	.809	.184	.234	4.400	.000	.875	1.143
	Family_business	.229	.160	.073	1.433	.153	.953	1.049
	Age	-.102	.178	-.052	-.575	.566	.300	3.336
	Work_Exp	-.027	.117	-.021	-.231	.818	.298	3.353
	Sector	.110	.134	.041	.818	.414	.962	1.039
2	(Constant)	4.985	.572		8.712	.000		
	Gender	.681	.168	.213	4.058	.000	.871	1.148
	Business_Exp	.760	.182	.220	4.175	.000	.869	1.151
	Family_business	.240	.158	.077	1.522	.129	.953	1.049
	Age	-.107	.176	-.054	-.607	.544	.300	3.337
	Work_Exp	-.024	.115	-.018	-.206	.837	.298	3.353
	Sector	.098	.133	.037	.735	.463	.961	1.040
3	(Constant)	4.255	.611		6.962	.000		
	Gender	.666	.166	.209	4.015	.000	.871	1.149
	Business_Exp	.752	.180	.218	4.182	.000	.869	1.151
	Family_business	.117	.161	.037	.730	.466	.896	1.116
	Age	-.097	.173	-.049	-.557	.578	.300	3.338
	Work_Exp	.001	.114	.000	.005	.996	.297	3.369
	Sector	.097	.131	.037	.743	.458	.961	1.040
4	(Constant)	1.911	.628		3.041	.003		
	Gender	.570	.152	.179	3.741	.000	.866	1.155
	Business_Exp	.432	.169	.125	2.549	.011	.823	1.215
	Family_business	.074	.148	.023	.500	.617	.895	1.117
	Age	-.156	.159	-.080	-.980	.328	.299	3.345
	Work_Exp	.033	.105	.026	.318	.750	.296	3.373
	Sector	.119	.120	.045	.991	.322	.961	1.041
	EH	-.089	.061	-.067	-1.457	.146	.935	1.069
	BP	.117	.047	.118	2.504	.013	.893	1.120
	PBC	.507	.062	.393	8.234	.000	.865	1.156

5	(Constant)	-.152	.600		-.253	.800		
	Gender	.414	.137	.130	3.026	.003	.853	1.172
	Business_Exp	.255	.152	.074	1.677	.094	.811	1.234
	Family_business	.152	.132	.049	1.157	.248	.892	1.121
	Age	-.074	.142	-.038	-.521	.602	.298	3.357
	Work_Exp	.053	.093	.041	.566	.571	.296	3.375
	Sector	.104	.107	.039	.976	.330	.961	1.041
	EH	-.069	.054	-.052	-1.265	.207	.934	1.071
	BP	.109	.041	.110	2.621	.009	.893	1.120
	PBC	.266	.060	.206	4.410	.000	.715	1.398
	ATB	.497	.052	.442	9.583	.000	.736	1.358

a. Dependent Variable: EI

Table 12. Parallel Mediation analysis output

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.3 *****

Written by Andrew F. Hayes, Ph.D.

www.afhayes.com

Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
Y : EI
X : EH
M1 : ATB
M2 : PBC
M3 : BP

Covariates:

Gender Business Family_b Age Work_Exp Sector

Sample
Size: 360

OUTCOME VARIABLE:

ATB

Model Summary

R	R-sq	MSE	F	df1	df2	p
---	------	-----	---	-----	-----	---

,325 ,105 1,738 5,926 7,000 352,000 ,000

Model

	coeff	se	t	p	LLCI	ULCI
constant	6,649	,523	12,717	,000	5,621	7,678
EH	-,137	,060	-2,289	,023	-,254	-,019
Gender	,411	,153	2,682	,008	,110	,713
Business	,665	,166	3,996	,000	,338	,992
Family_b	-,073	,144	-,507	,612	-,357	,211
Age	-,112	,160	-,696	,487	-,427	,204
Work_Exp	-,079	,105	-,751	,453	-,286	,128
Sector	,009	,121	,072	,943	-,230	,247

OUTCOME VARIABLE:

PBC

Model Summary

R	R-sq	MSE	F	df1	df2	p
,352	,124	1,292	7,133	7,000	352,000	,000

Model

	coeff	se	t	p	LLCI	ULCI
constant	5,000	,451	11,092	,000	4,113	5,886
EH	-,192	,052	-3,729	,000	-,294	-,091
Gender	,196	,132	1,483	,139	-,064	,456
Business	,636	,143	4,433	,000	,354	,918
Family_b	,150	,124	1,206	,229	-,095	,395
Age	,112	,138	,808	,420	-,160	,384
Work_Exp	-,077	,091	-,850	,396	-,256	,101
Sector	-,043	,105	-,408	,683	-,248	,163

OUTCOME VARIABLE:

BP

Model Summary

R	R-sq	MSE	F	df1	df2	p
,310	,096	2,265	5,351	7,000	352,000	,000

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,611	,597	7,726	,000	3,438	5,785
EH	-,206	,068	-3,019	,003	-,340	-,072
Gender	,096	,175	,550	,583	-,248	,440
Business	,050	,190	,266	,791	-,323	,424
Family_b	,777	,165	4,714	,000	,453	1,101
Age	-,063	,183	-,341	,733	-,423	,298
Work_Exp	-,153	,120	-1,274	,203	-,390	,083
Sector	,001	,138	,010	,992	-,271	,274

OUTCOME VARIABLE:

EI

Model Summary

R	R-sq	MSE	F	df1	df2	p
,673	,453	1,354	28,864	10,000	349,000	,000

Model

	coeff	se	t	p	LLCI	ULCI
constant	-,152	,600	-,253	,800	-1,332	1,028
EH	-,069	,054	-1,265	,207	-,176	,038
ATB	,497	,052	9,583	,000	,395	,599
PBC	,266	,060	4,410	,000	,148	,385
BP	,109	,041	2,621	,009	,027	,190
Gender	,414	,137	3,026	,003	,145	,683
Business	,255	,152	1,677	,094	-,044	,554
Family_b	,152	,132	1,157	,248	-,107	,412
Age	-,074	,142	-,521	,602	-,354	,205
Work_Exp	,053	,093	,566	,571	-,131	,236
Sector	,104	,107	,976	,330	-,106	,315

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

EI

Model Summary

R	R-sq	MSE	F	df1	df2	p
,389	,152	2,081	8,981	7,000	352,000	,000

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,985	,572	8,712	,000	3,860	6,110
EH	-,210	,065	-3,215	,001	-,339	-,082
Gender	,681	,168	4,058	,000	,351	1,011
Business	,760	,182	4,175	,000	,402	1,119
Family_b	,240	,158	1,522	,129	-,070	,551
Age	-,107	,176	-,607	,544	-,452	,239
Work_Exp	-,024	,115	-,206	,837	-,251	,203
Sector	,098	,133	,735	,463	-,163	,359

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_ps	c'
-,210	,065	-3,215	,001	-,339	-,082	-,136	-,

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_ps	c'
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- ,069 ,054 -1,265 ,207 - ,176 ,038 - ,044 - ,

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
TOTAL	-,142	,041	-,222	-,062
ATB	-,068	,028	-,124	-,013
PBC	-,051	,020	-,094	-,018
BP	-,022	,012	-,051	-,003
(C1)	-,017	,029	-,074	,041
(C2)	-,046	,030	-,105	,013
(C3)	-,029	,024	-,077	,016

Partially standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
TOTAL	-,091	,026	-,143	-,041
ATB	-,044	,018	-,079	-,008
PBC	-,033	,012	-,060	-,011
BP	-,014	,008	-,033	-,002
(C1)	-,011	,019	-,048	,026
(C2)	-,029	,019	-,067	,009
(C3)	-,019	,015	-,050	,010

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
TOTAL	-,107	,030	-,166	-,047
ATB	-,051	,021	-,092	-,010
PBC	-,039	,015	-,070	-,013
BP	-,017	,009	-,038	-,002
(C1)	-,013	,022	-,056	,031
(C2)	-,034	,022	-,078	,010
(C3)	-,022	,018	-,058	,012

Specific indirect effect contrast definition(s):

(C1)	ATB	minus	PBC
(C2)	ATB	minus	BP
(C3)	PBC	minus	BP

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

10000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

----- END MATRIX -----