UNIVERSITEIT VAN PRETORIA
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YUNIBESITHI YA PRETORIA

ASSESSING THE EFFECT OF MANAGEMENT EDUCATION ON VOCATIONAL BEHAVIOUR

by

LEHLOHONOLO MAKHABANE TABANE

Submitted in fulfilment of the requirements for the degree

PhD in Industrial and Organisational Psychology

in the

FACULTY OF ECONOMIC AND MANAGEMENT SCIENCES

at the

UNIVERSITY OF PRETORIA

Supervisor: Prof O. Ledimo

PRETORIA **APRIL 2021**

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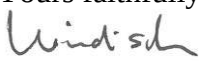

Margot Windisch
+27 72 158 6605

DEDICATION

This doctoral research is dedicated to my parents, Dr Letsholo M Tabane and Mrs Phola B Tabane and sister, Moshibudi Tabane. I thank my parents for providing my sister and me with a high-quality educational foundation and encouraging us to pursue the highest qualifications in preparation for our careers. Thank you, Mom, for always taking care of me, building my confidence and reminding me to never give up on my dreams. Thank you, Dad, for stimulating my creative mindset since childhood, teaching me to be fearless and to attack challenges. Thank you, Sister, for always praising my achievements and spoiling me. I hope that this research project will remind you to plan ahead, sustain your energy and grab the benefits of your efforts! I love you, my family.

ACKNOWLEDGEMENTS

Prof Ledimo, my Ph.D. Supervisor, thank you for accepting me as your doctoral student and guiding my research to completion. You have been nothing but supportive of my efforts; I appreciate your warmth and encouragement, and hope to make you proud with this research.

Mr Jonathan Cook, thank you for catalysing the beginning of my professional career as an Industrial/Organisational Psychologist by connecting me with Mr Conrad Viedge, the former MBA Director at Wits Business School.

Mr Conrad Viedge, my mentor, I cannot thank you enough for all the special things you have done for me over the years. I gained wonderful work experience through my internship under your supervision, eventually qualifying as an Industrial/Organisational Psychologist. I developed an interest in management education and leadership development – from the first Management book you prescribed: Mintzberg's *Managers not MBAs: A hard look at the soft practice of managing and management development*. I read this book cover-to-cover. Even with a huge workload and tight schedule you always had time for me, making my introduction to the workplace memorable. Thank you for supporting my career development. Your role in me eventually qualifying as "Dr Lehlohonolo M Tabane" is incalculable!

Prof Driekus Kriek, I appreciate you taking an interest in me whilst at Wits Business School and exposing me to the Leadership Development Centre. I'm grateful for your vote of confidence and providing me the opportunity to meet with Prof Stella Nkomo. You catalysed an important step in my career development before leaving for the UK. Thank you!

Prof Stella Nkomo, I will forever be grateful to you for encouraging me to stick to my research and focus on "the prize". Thank you for your warm reception at our first meeting in your office and reassuring me of my talent. I also thank you for introducing me to the Academy of Management and the research seminars you chaired. I feel proud that someone of your level of achievement has shown me such kindness. Thank you, Prof!

Dr Saker, my statistician, thank you for the statistical analyses that gave life to my research. The analyses produced interesting results, which have enabled me to develop theory.

Sincere thanks to all the institutions and their respective post-graduate management students for their participation in my study. Through you, I was able to advance theory in the domain of Industrial and Organisational Psychology.

ABSTRACT

The study investigated the effect of post-graduate management education, viz., Master of Business Administration, Master of Business Leadership and Specialised Master's programmes, on the vocational behaviour of candidates. Vocational behaviour was operationalised by five indicators, viz., career decision-making self-efficacy, vocational identity, work identity, career commitment and vocational interest/personality. These indicators fit into the categories of *vocational choice* e.g., theories of occupational interest and their measurement, and vocational decision-making process; and *vocational adjustment* e.g., career commitment, all of which underpin vocational behaviour research. This study used Holland's Typology (1985) as the theoretical model. A prospective causal-comparative design was used to address the research questions. Phase One of the research entailed a cross-sectional study involving post-graduate management students in various programmes. A within- and between-subjects design was employed. Discriminant Function Analysis (DA) established that the Enterprising personality type was the best predictor of both the Enterprising type (E-type) and Social type (S-type) environments *in South Africa*. Holland's (1985) fourth working assumption, "Behaviour is determined by an interaction between personality and environment" (p. 4), was not fully supported by the current study. Person-Environment fit (P-E fit) did not predict vocational behaviour; however, *t*-test results established significant within and between group differences in vocational behaviour as a function of P-E fit. Moreover, it was established that incongruence is not always associated with negative outcomes; similarly, congruence is not always linked to positive outcomes. The Phase Two study was intended to examine whether management education could catalyse psychological behaviour change. However, exposure to management education did not lead to changes in students' vocational behaviour. Furthermore, congruence (P-E fit) did not moderate the effect of the academic environment on the vocational behaviour of the students. In this regard, the hypothesised model for Phase Two study was not supported. However, the Phase Two study hypothesized model is an original model which could benefit from being tested using a large sample (more specifically an identical sample at Time 1 and Time 2 data collection phases). Furthermore, this longitudinal research should be carried out on a national level across all universities, business and governance schools. Research funding would be required to execute this project on a large scale.

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CHAPTER 1

INTRODUCTION

Using Holland's (1985) Typology as a theoretical model, this study sought to establish, inter alia, whether management education could catalyse vocational behaviour change amongst post-graduate management students. This chapter presents an account of the background of the study; motivation for the study; problem statement and variables of the study. Additionally, the two phases of the study with their attendant research aims, research questions, hypotheses and hypothesised models are introduced; and the contribution of the study is presented.

According to its Author Information Pack (2014), the *Journal of Vocational Behavior* focuses on the development of knowledge on vocational behaviour and career development across life's trajectory. As such, the journal encompasses research issues in the areas of career choice, implementation, vocational adjustment and adaptation. Its theoretical outputs can be applied in the following contexts: counselling, university and college career development programmes, business and industry as well as in government and the military. Research areas in the field of vocational behaviour range from career development and choice to vocational and career adjustment, and work commitment and involvement. The study was intended to assess the *vocational behaviour* of participants, using the following *indicators*: career decision-making self-efficacy, vocational identity, work identity, career commitment and vocational interest/personality (RIASEC types defined by Holland, 1985). These indicators fit into the categories of *vocational choice* (e.g., theories of occupational interests and their measurement; the vocational decision-making process) and *vocational adjustment* (e.g., career commitment) all of which underpin vocational behaviour research.

Based on the present researcher's reflections, this study was exploratory and descriptive in nature, investigating the psychological impact[1] of post-graduate management education. The study involved and sought to contribute to the conversation of congruence research concerning Holland's (1985) Typology, by testing an alternative statistical direction of his fourth main assumption, viz., behaviour is determined by an interaction between personality and environment. A key question was: does exposure to post-graduate management education (an academic environment) produce changes in students' vocational behaviour? Holland's (1985) Typology was used to classify differences in vocational behaviour change *within* and *across*

[1] The words effect and impact are used as synonyms in accordance with the Oxford Pocket English Dictionary.

post-graduate management education programmes (MBA, MBL and a variety of Specialised Master's programmes). The anticipated psychological impact of post-graduate management education was viewed as an alternative way to measure the return on investment (ROI) of such academic programmes. The inclusion of traditional MBA samples (core courses) and a selection of Specialised Master's programme samples was inspired by the traditional MBA vs. Specialised Master's debate in management and leadership literature (Barber, 2018; Baruch et al., 2005; Kumar, 2015; Pounder & Ross, 2018; Stoten, 2018). It is against this backdrop that the argument for congruence (P-E fit) was made, where P-E fit was strongly anticipated amongst the Specialised Master's programmes, but less so amongst the traditional MBA programmes – for reasons outlined later in this study.

This study was based on Holland's (1985) theory of vocational choice. In the next chapter an account of Holland's theory is presented. However, of immediate relevance are the basic tenets and assumptions of this theory. Holland posits that each person to some degree resembles one of six basic personality types, viz., the Realistic, Investigative, Artistic, Social, Enterprising and Conventional personality types. Corresponding to the six personality types are six types of environments, viz., the Realistic, Investigative, Artistic, Social, Enterprising and Conventional work environments. A personality type is attracted to a work environment that resembles it, i.e., people search for work environments that will let them exercise their abilities and express their values. A person's behaviour is determined by the interaction between their personality and the characteristics of their work environment. Congruence reflects the degree to which a person's personal qualities match the demands of the chosen environment, i.e., Personality – Environment fit (P-E fit) (Holland, 1985). This study was located in the educational environment, viz., the business management education environment and public management education environment. The business management education environment, which represents the Enterprising environment, includes the MBA, MBL and Specialised Master's programmes. The MBA/MBL trainees would be classified primarily as Enterprising in the Dictionary of Holland Occupational Codes (Gottfredson et al., 1982, p. 355). Similarly, governance, which includes post-graduate programmes in Public Administration and Management, represents the Social environment.

It was important to discover what vocational behaviour underpins a person's choice of an academic environment. This study sought to provide insight into the vocational behaviour of MBA, MBL and Specialised Master's students, as well as Governance (Public Administration and Management) post-graduate students. In the context of this study, the

Governance post-graduate students were treated as Specialised Master's students. Identification of vocational behaviour of post-graduate management students could facilitate the selection of prospective students and their placement into suitable identified academic programmes. The aforementioned post-graduate students' vocational behaviour, which in part is the expression of their work preferences, required investigation. This was the overall first objective of the study. Vocational behaviour is susceptible to change as a result of the influence of external factors. Unlike the Specialised Master's students, the MBA and MBL students often come from diverse academic backgrounds. This study also explored the possible vocational behaviour change that was expected of MBA/MBL and Specialised Master's students once they had received management education. This was the overall second objective of the research.

Phase One of the study entailed cross-sectional data sourced from post-graduate management students in Governance (Public Administration and Management) and in Business (MBA, MBL and Specialised Master's). The cross-sectional design involved different samples tested at the same general time (McBurney, 1998). The data were used to assess the vocational behaviour of these groups. Phase Two of the study encompassed the Enterprising (Business) and the Social (Governance) Management education environments and entailed longitudinal data sourced from post-graduate management students in MBA, MBL and Specialised Master's programmes. The longitudinal data were used to assess any vocational behaviour change of these groups. The longitudinal design (McBurney, 1998) involved administering the survey to the MBA, MBL and Specialised Master's students of the Business Schools and School of Governance on two occasions with a 5-to-6-month time lapse (repeated measures design), in order to assess the changes experienced by these students over time. The students were tracked and measured with the same instruments (i.e., the South African Career Interest Inventory (SACII), My Vocational Situation (MVS), Career Commitment Scale (CCS), Career Decision-Making Self-Efficacy Scale (CDMSE) and Work-Based Identity Scale) to determine what effect the independent variable (management education) had on the dependent variable (vocational behaviour change). Participant attrition tends to be a feature of longitudinal research (Carić & Kocijan, 2019; Miller, 2015; Von Maurice et al., 2017; Wang et al., 2017; Winiarska, 2017). Kerlinger and Lee (2000, p. 606) caution that the attrition rates with longitudinal surveys are high, depending on the length of time over which the study is conducted. It was considered that Phase Two of this study would probably not escape this peril. In this regard a relatively small sample size was expected. On the other hand, the cross-

sectional design in which all data were collected at the same point in time held promise for this research. The two phases were interlinked; Phase One data sourced from the MBA, MBL and Specialised Master's students was also used in the Phase Two investigation.

1.1 Background of the Study

The conception of this doctoral research was born out of the researcher's experience working at an esteemed South African Business School. As an employee the researcher was involved, inter alia, in the selection of students and their placement into the Master of Business Administration (MBA) and Post-graduate Diploma in Management (PDM) programmes; and in facilitation of interest measurement and personality assessment for career management purposes for these students. The researcher engaged with senior consultants and recruiters of top-tier management consulting firms and financial institutions regarding the qualities they sought when recruiting business school graduates. Furthermore, in the graduate recruitment role the researcher had conversations with students who were conflicted by the choice of pursuing a Specialised Master's or an MBA programme. At one point, the researcher had a conversation with the Chief Executive Officer (CEO) of a South African management consulting firm, who queried the return on investment of paying for his employees' MBA studies. These were interesting encounters which increased the researcher's interest in the fields of management and leadership development, as well as vocational psychology. Having read Mintzberg's (2004) *Managers not MBAs: A hard look at the soft practice of managing and management development*, the researcher gained an appreciation that this practice is as much artistic as it is scientific.

Management education and leadership development is considered to be a global enterprise. Across industries, competent leaders are sought after to maintain high-performance cultures and improve organisations' competitive advantage. Such leaders are also required to help organisations and their members navigate changes in the world's social, political and economic climates. Educated, experienced and psychologically well-adjusted managers and leaders are the heartbeat of effective organisations and lift employee morale. The importance of this study became clear when one considered the role of effective management and leadership in various functional areas of business as well as in the development of a healthy, globally-competitive workforce. An investigation into the psychological factors that are involved in leader-development remains an important starting point in understanding the career behaviour of managers and leaders as well as the psychological conditions that precede

decision-making within an organisational/vocational context. It is important to know the psychological "make-up" of managers with regard to their vocational behaviour. It is an important research endeavour that is relevant to a national and global audience of stakeholders in the field of Management and Leadership Development, as well as Industrial/Organisational Psychology. This study was intended to reiterate the importance of knowing whether management education, i.e., Master of Business Administration and/or Master of Business Leadership (MBL) core courses and Specialised Master's programmes, can catalyse psychological behaviour change. The study used a sample of employees from various industries with diverse academic qualifications. In this way, it can be viewed as a relevant project, which engages with a varied group of educated and economically active citizens. They are members of society who are likely to be at the helm of multinational as well as regular organisations which contribute to the South African economy.

1.2 Motivation for the Study

On Aguinis and Vandenberg's (2014) second question, "What is the evidence that the chosen research question represents an important challenge in the field?"(p. 580) the following arguments for this study are advanced:

- Various studies concerned with MBA programmes have covered, inter alia, the following themes: student performance during an MBA programme (Kumar, 2015; Yang & Lu, 2001); skills acquisition through MBA programmes (Boyatzis et al., 2002; Pounder & Ross, 2018); critiques levelled against MBA programmes (Grey, 2004; Hay & Hodgkinson, 2008; Mintzberg, 2004; Stoten, 2018); and methods to enhance such programmes in response to 21st century conditions (Barber, 2018; Dunne & Martin, 2006; Kedia & Harveston, 1998).
- The fourth industrial revolution is recognised by the World Economic Forum (WEF). Barber (2018) asserts that managers' roles, including an appropriate skillset for the fourth industrial workplace, remain in flux. The author argues that innovative executive education within this volatile context would be valuable.

Barber's (2018) view on the positive impact of innovative executive education on managers' behaviour in the fourth industrial workplace is acknowledged. The choices and adjustments (skillset) required of managers in this fluctuating organisational context represent vocational behaviour. Building on the logic of the impact management education has on students, the current study moved away from the aforementioned themes to investigate the

psychological impact of post-graduate management programmes, i.e., the manner in which post-graduate management education alters the vocational behaviour of a person.

Literature suggests that MBA graduates do not necessarily translate into better managers (Barber, 2018; Mintzberg, 2004; Pfeffer & Fong, 2002 as cited in Grey, 2004), with Stoten (2018) arguing that an MBA should be 'fit for purpose'. However, this study posited that a post-graduate management programme might lead to an improved vocational profile of an individual. It was considered that post-graduate management education may have led to changes in levels of the indicators of vocational behaviour. For some individuals there may be a gradual improvement while for others there may be a drastic change in vocational behaviour. The implication is that even if a person might not become a better manager per se, the post-graduate management education might improve the person's vocational behaviour profile, still making the individual a more attractive worker. Hence this study purported to forge a link between management education and vocational psychology.

1.3 Problem Statement

Studies on the MBA programme have largely involved, inter alia, the following areas:

- Management education and management development (Grey, 2004; Hay & Hodgkinson, 2008; Mintzberg, 2004; Schlegelmilch & Thomas, 2011; Simpson, 2006); and leader development that is tailored to organisations' needs in a national and global context (Kedia & Harveston, 1998; Pounder & Ross, 2018).
- Evaluating the utility of an MBA using the following criteria: programme length and quality, programme availability and entry requirements, cost, courses and target market (Pounder & Ross, 2018).
- Gupta and Bennett (2014) examined the impact of the MBA educational experience on four types of human capital viz., social-, administrative-, ingenious-, and logical capital. Findings suggested that qualitative MBA courses were significantly related to ingenious, logical, and social capital whilst quantitative courses were related to administrative and ingenious skills.
- Baruch et al. (2005) conducted a longitudinal study, using alumni of MBA and Specialised Master's programmes, to compare the outcomes of the generalist MBA with those of specialised graduate programmes. Findings suggested that both MBA and specialist programmes were similar in terms of performance, self-efficacy, income and career success.

- Studies indicate that the MBA is geared to promoting graduates' career development whilst Professional Master's programmes are designed to deepen students' knowledge and competence in a specific area (Baruch et al., 2005; Gupta et al., 2007; Kumar, 2015).

The current study sought to investigate the impact of management education (independent variable) on the vocational behaviour (dependent variable) of MBA/MBL and Specialised Master's candidates. There was a gap for research on the immediate impact and psychological effect of post-graduate management education beyond the classroom (managerial skillset).

Studies similar to the current one using Holland's (1985) theory have yielded interesting outcomes.

Using Holland's theory, Fritzsche et al. (2002) employed a sample of advanced undergraduate students to assess the links between the Five Factor Model (FFM) of personality and performance across six RIASEC environments. The authors predicted that the personality-performance relationship would be moderated by a RIASEC environment. Findings modestly indicated that the RIASEC environments behaved as a moderator of the personality-performance relationship. Performance in Investigative, Artistic and Social environments was better predicted by agreeableness than in Realistic, Enterprising and Conventional environments. This study highlighted the usefulness of Holland's taxonomy in increasing prediction of performance.

In a cross-sectional study, using Holland's framework, Orkibi (2016) assessed whether high scores on Artistic and Social vocational personality types would buffer the impact of burnout on the career commitment of 505 Israeli students and therapists. Outcomes of the study indicated a negative correlation between burnout and career commitment; and a moderating effect of the aforementioned vocational personality types (i.e., a high composite score on the Artistic and Social Types) on the burnout-career commitment relationship. Given that the identified vocational personality types were congruent with the art therapies professions, thus serving a protective function against the impact of burnout on career commitment, Orkibi (2016) concluded that special attention should be paid to individuals who score lower on the chosen vocational types of the study or higher on other types.

Ochnik (2019) explored differences in vocational interest between Management and Physiotherapy students on the basis of gender. Men were expected to achieve high scores on technical interests, whilst women were expected to obtain high scores on pro-social and

methodical interests. Additionally, it was expected that the Physiotherapy students, as opposed to their Management counterparts, would be high on pro-social interests and display low scores on leadership type. The Vocational Potential Inventory (Ochnik et al., 2016, as cited in Ochnik, 2019) was used and this measure featured five types of vocational preferences, viz., pro-social, leadership, creative, technical and methodical. Findings suggested that Management students scored significantly higher in leadership vocational interests. A significant gender effect was observed regarding the following vocational interest types: methodical, leadership, technical and pro-social (Ochnik, 2019). Accordingly, men had higher scores in technical, methodical and leadership vocational interests, whilst women scored high in the pro-social interest. In summary, Management (rather than Physiotherapy) students had a stronger leadership vocational interest. Whilst the study by Ochnik (2019) has some resemblance to the current study, it is different in the following ways: the scales that produce vocational interests are different and the target groups for the study are also different. However, the 'recent' nature of Ochnik's (study) highlights the relevance of interest measurement in vocational behaviour, as a research topic.

To the researcher's knowledge, there seems to be a lack of studies that have examined the moderating role of congruence (P-E fit) within Holland's Typology against the backdrop of the selected variables of the study. The concept of congruence is further explored in Chapter 2.

1.4 Variables of the Study

This section accounts for the variables of the study and the manner in which they have been used together in literature. Firstly, the variables were defined as identified in the literature. These variables were arranged in the following order: antecedents, to moderators, to outcomes. Secondly, the hypothesised models for this study were developed and depicted.

1.4.1 Antecedent Variable. In this study academic environment was the classification variable. The School of Governance (Public Administration and Management programme) provided the academic environment for post-graduate students in the public sector while the Business School was the academic environment for post-graduate students in the private sector. Only two examples of the Business Schools that were targeted by the study are provided. The following are the core courses (academic environment) of the MBA programme of the first Business School accredited by the Association of MBAs:

- Management & Financial Accounting, and Finance;

- Economics for Business;
- Technology & Operations Management;
- Strategy;
- Organisational Design and Development and People Management;
- Critical Enquiry Skills;
- Business Society & Collective Action;
- Marketing in a Connected World;
- Finance & Investment Decisions;
- Entrepreneurship;
- Business Integration; and
- Case Competition.

At the second Business School for the study, which has a triple-crown accreditation status, the following core courses are covered in the MBA in General Management:

- Human Resource Strategy;
- Financial and Management Accounting;
- Operations Management;
- Marketing;
- Environment of Business;
- Decision Making;
- Innovation and Design;
- Strategic Implementation;
- Leadership; and
- Integrated Simulation.

Given that the MBA programmes combine theory with practical applications, it was considered that the aforementioned core courses that involve practical job-related learning experiences might influence the levels of the chosen indicators of vocational behaviour. On business curricula, the AACSB International (2017) document titled *Eligibility Procedures and Accreditation Standards for Business Accreditation*, states that although the importance of the majority of skill areas is likely to endure, knowledge areas might fluctuate owing to changes in the theory and practice of business and management. Curricula ought to include experiential and active learning to promote practical knowledge application. *Standard 9 maintains that curriculum content should be appropriate to general expectations for the degree programme*

type and learning goals. Curriculum content denotes theories, ideas, concepts, skills, and knowledge that comprise a degree programme aimed at preparing graduates for careers in business and management. According to AACSB International (2017), there are general business knowledge areas (e.g., social contexts of organisations in a global society; systems and processes in organisations, including supply chains, marketing, and distribution), which Business Schools are at liberty to transform into competencies aligned with the degree programme's learning goals and target population (post-graduate students).

Beyond the suggested general business knowledge areas, a general business master's degree programme could include these learning experiences:

- Leading in organisational situations;
- Managing in a diverse global context;
- Thinking creatively;
- Making sound decisions and exercising good judgment under uncertainty; and
- Integrating knowledge across fields.

Beyond the general skill areas, the learning areas prioritised in specialised business master's degree programmes are the following (AACSB International, 2017, pp. 35-36):

- Understanding the specified discipline from multiple perspectives;
- Framing problems and developing creative solutions in the specialised discipline;
- Applying specialised knowledge in a diverse global context (for practice-oriented degrees); or
- Conducting high-quality research (for research-oriented degrees).

Against the backdrop of Holland's (1985) theoretical framework, there is a difference between the MBA and the Specialised Master's (e.g.MMFI/MCom. in Financial Management Sciences/MCom. Marketing Management) groups. Holland (1985) argues that

> each type has a characteristic repertoire of attitudes and skills for coping with environmental problems and tasks. Different types select and process information in different ways, but all types seek fulfilment by exercising characteristic activities, skills, and talents and by striving to achieve special goals. Consequently, types are often active rather than passive recipients of environmental influence, for they both seek and avoid environments, problems and tasks (p. 3).

Thus, according to Holland's (1985) third working assumption, “people search for environments that will let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles” (pp. 2-4).

In light of the aforementioned theoretical view, person-environment congruence (P-E fit) amongst the MMFI/ MCom. in Financial Management Sciences group was expected, given that the academic programme is a Specialised Master’s degree, candidates of which were regarded to have made a deliberate career choice to develop further within the financial field. General knowledge about MBA candidates suggests that these students originate from a variety of professional settings/industries (e.g. Medicine, Engineering etc.). Therefore, it was anticipated that there may be less person-environment congruence amongst this group, owing to the 'mixed-bag' of candidates with variant career experience. Moreover, Holland (1985) opines that people who closely represent a specific RIASEC type are likely to display the personal behaviours and traits of that type. The person-environment link leads to certain outcomes (Su et al., 2015), e.g., vocational choice, vocational stability and achievement, personal competence, educational choice and achievement, susceptibility to influence and social behaviour, all of which can be predicted and understood based on personality types and environmental models research.

1.4.2 Moderator Variable. In Phase Two of the study, congruence (P-E fit) was the moderator variable. Vocational Personality (RIASEC types) as defined in Holland's Typology, was used for classification purposes in the study. These personality types are explained in Chapter 2. The South African Career Interest Inventory (SACII) developed by Morgan et al. (2014) was used to produce the RIASEC types for this study.

1.4.3 Outcome Variable The outcome variables of this study included the indicators of vocational behaviour viz., career decision-making self-efficacy, vocational identity, work identity, career commitment and vocational interest/personality. These variables are embedded in literature; they are accounted for in Chapter 2. The following are definitions of the dependent variable (vocational behaviour indicators):

- *Career decision-making self-efficacy* denotes individuals’ self-confidence in their own ability to finish tasks which are essential to career decision-making (Taylor & Betz, 1983). The Career Decision-Making Self-Efficacy Scale (CDMSE) developed by Taylor and Betz (1983) measures the degree of an individual’s self-belief in their ability to successfully complete tasks which are vital to the career decision-making process (Betz, 2000).

- *Vocational identity* means "the possession of a clear and stable picture of one's goals, interests, personality and talents. This characteristic leads to relatively untroubled decision-making and confidence in one's ability to make good decisions in the face of inevitable environmental ambiguities" (Holland et al., 1980, p. 1).
- *Work identity* is defined as "a work-based self-concept, constituted of a combination of organizational, occupational, and other identities, that shapes the roles individuals adopt and the corresponding ways they behave when performing their work in the context of their jobs and/or careers" (Walsh & Gordon, 2008, p. 47).
- *Career commitment* refers to "a person's belief in and acceptance of the value of his or her chosen occupation or line of work and willingness to maintain membership in that occupation" (Vandenberg & Scarpello, 1994, as cited in Popoola & Oluwole, 2007, p. 108). Aryee and Tan (1992) concur with this view, stating that "career commitment is underpinned by the notion of a career as a predictable series of related jobs arranged in a hierarchical status in a particular occupation thus offering the career aspirant an opportunity for career progression" (p. 289). Blau (1988) suggests that an indication of a person's career motivation can be inferred from the measurement of that individual's career commitment. Hence, Hall (1971) viewed career commitment as "the strength of one's motivation to work in a chosen career role" (p. 59, as cited in Blau, 1988).

For Phase One vocational behaviour was the dependent variable, whilst for Phase Two vocational behaviour change was the dependent variable. Congruence (P-E fit) was the independent variable for the Phase One study and the moderator variable for the Phase Two study. According to Holland's (1985) fourth working assumption, P-E fit (congruence) is a predictor and behaviour is the outcome variable.

1.5 Phase One Study

The following section provides an account of the research aims, questions and hypotheses of the study. In the context of this study, vocational profiles represented a collection of data on the vocational behaviour of the participants.

1.5.1 Research Intention. Phase One of the study was intended to *investigate* the vocational behaviour of individuals enrolled in different post-graduate management programmes in the business sector i.e., MBA, MBL and Specialised Master's students; and the public sector i.e., Post Graduate Diploma in Management (PDM) and Master of Public Administration and Management students. Vocational behaviour was assessed using the

following indicators: career decision-making self-efficacy (CDMSE), vocational identity, work identity, career commitment and vocational interest (RIASEC Types), produced by the South African Career Interest Inventory-SR (SACII-SR) instrument. These indicators fit into the categories of vocational choice (e.g., theories of occupational interests and their measurement; the vocational decision-making process) and vocational adjustment (e.g., career commitment), all of which underpin vocational behaviour research.

1.5.2 Research Aims. The following were the aims of the research:

- To obtain the RIASEC Types of individuals in different post-graduate management education programmes, according to Holland's Typology;
- To establish the dominant RIASEC type that reflects the 'academic environment code', within each post-graduate management education programme so that congruence (P-E fit) or lack thereof can be determined; and
- To examine the vocational behaviour of individuals in different post-graduate management education programmes.

1.5.3 Research Questions. Aguinis and Vandenberg (2014) state that journal editors and reviewers prioritise the following questions when evaluating the quality of a research question: a) What is the evidence that the particular question represents a puzzle, conundrum, or point of confusion? b) What is the evidence that the chosen research question represents an important challenge in the field? and c) Does the research question aim at creating and/or shifting consensus? Similarly, Antonakis (2017) asserts that the utility of research is contingent on the originality of its contribution, whether it contributes to cumulative research efforts, is thoroughly and reliably executed, and if it informs applied research and policy. He argues that useful science addresses the following questions:

i) 'So what?' Is the theoretical or empirical contribution original?
ii) 'Is it rigorous?' Is the research robust, accurate and reliable – and does it reflect the uncovered process or causal links? and
iii) 'Will it make a difference?' – do the findings of the research allow one to grasp the building blocks of the phenomenon?

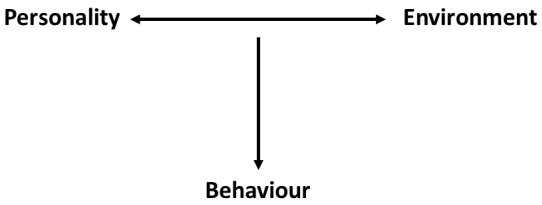
The above questions are addressed below:

i) 'So what?' (Is the theoretical or empirical contribution original?). Phase One of this research sought to test Holland's (1985) assumption: "Behaviour is determined by an interaction

between personality and environment" (p. 4). In this regard, "behaviour" was operationalised using a selection of vocational behaviour indicators viz., career decision-making self-efficacy (CDMSE), vocational identity, work identity, career commitment and vocational interest/personality (i.e., RIASEC Types produced by the SACII-SR).

Figure 1

Theoretical Model for Phase One Study



Note: Holland's (1985) assumption viz., vocational behaviour is determined by an interaction between RIASEC Personality Type and Academic Environment.

In this regard, **"**behaviour**"** was operationalised using a selection of the aforementioned vocational behaviour indicators.

ii) Is it rigorous?' (Is the research robust, accurate and reliable – and does it reflect the uncovered process or causal links?). This research targeted different groups of post-graduate management students within the business and public sectors. The *vocational behaviour* of these groups was measured using a selection of vocational behaviour indicators. This study provided the opportunity to test if there were any differences in the vocational behaviour of the aforementioned groups. Phase One, which was a cross-sectional study of vocational behaviour, was linked to a longitudinal study (Phase Two), which sought to assess *vocational behaviour change* of post-graduate management students (MBA/MBL & Specialised Master's). The study was robust as it involved cross-sectional and repeated measures designs.

iii) Will it make a difference?' (Do the findings of the research allow one to grasp the building blocks of the phenomenon?). It was considered that the Phase One Study would allow the researcher to observe differences in the vocational behaviour of those in designated post-graduate management programmes (MBA/MBL, Specialised Master's, PDM and Master of Public Administration and Management). From a career counselling perspective and for purposes of guidance of students pursuing post-graduate management education, it was considered important to know the manner in which the target academic programmes were

associated with vocational behaviour indicators. The information could help academic selection committees in choosing potential students for placement into suitable academic programmes. Also, applicants for post-graduate management education programmes may be drawn to programmes which are associated with vocational behaviour which they see in themselves.

The above questions were used to frame the value of this study. Accordingly, the key questions for the Phase One study were the following:

1) Is there a relationship between the choice of a management education programme (MBA/MBL & Specialised Master's; and Master's & PDM in Public Administration and Management) and vocational behaviour?

2) Are there differences between the vocational behaviour of business management students and governance (public management & administration) students? Specifically, using cross-sectional data, does congruence (P-E fit) produce different vocational behaviour for different groups of post-graduate management students?

The theoretical contribution of Phase One study examined P-E fit with respect to within group differences and between group differences. In this regard, the following specific research questions on P-E fit were apposite:

- Within group differences:

  1) Are there differences in vocational behaviour between congruent and incongruent governance (public administration and management) students?

  2) Are there differences in vocational behaviour between congruent and incongruent business management students?
- Between group differences:

  3) Are there differences in vocational behaviour between *congruent* governance (public administration and management) students and business management students?

  4) Are there differences in vocational behaviour between *incongruent* governance (public administration and management) students and business management students?

1.5.4 Hypotheses of Phase One Study. The following assumptions and attendant hypotheses of this study are based on Holland's theory of vocational choice (Holland, 1985):

Assumption 1: Students' personality type is associated with the academic environment. The following hypotheses were formulated to test this assumption:

H1a: Enterprising personality type ('E-type') is associated with Enterprising academic environment ('E-type academic environment code'), viz., MBA/MBL, Specialised Master's e.g., MCom. (Financial Management Sciences and Marketing Management).
H1b: Social personality type ('S-type') is associated with Social academic environment ('S-type academic environment code') viz., Governance programme (Public Administration & Management).

The association of vocational behaviour indicators with congruence (P-E fit) would be established, whereafter congruence (P-E fit) as a predictor of vocational behaviour indicators would be investigated i.e. how much variance in each of the indicators of vocational behaviour was explained by congruence. In so doing, Holland's assumption would have been tested.

Assumption 2: A high level of vocational behaviour is associated with congruence (P-E fit). The following hypotheses were formulated to test this assumption:

H2a: Career commitment is positively associated with congruence amongst post-graduate management students.
H2b: Career decision-making self-efficacy is positively associated with congruence amongst post-graduate management students.
H2c: Vocational identity is positively associated with congruence amongst post-graduate management students.
H2d: Work identity is positively associated with congruence amongst post-graduate management students.

Assumption 3: Congruence (P-E fit) predicts vocational behaviour. The following hypotheses were formulated to test this assumption:

H3a: Congruence among post-graduate management students predicts career commitment.
H3b: Congruence among post-graduate management students predicts career decision-making self-efficacy.
H3c: Congruence among post-graduate management students predicts vocational identity.
H3d: Congruence among post-graduate management students predicts work identity.

Figure 2

The Hypothesised Model for Phase One Study

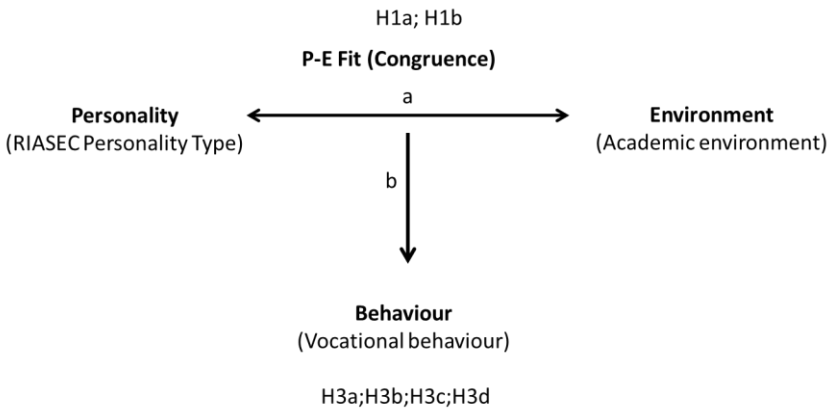
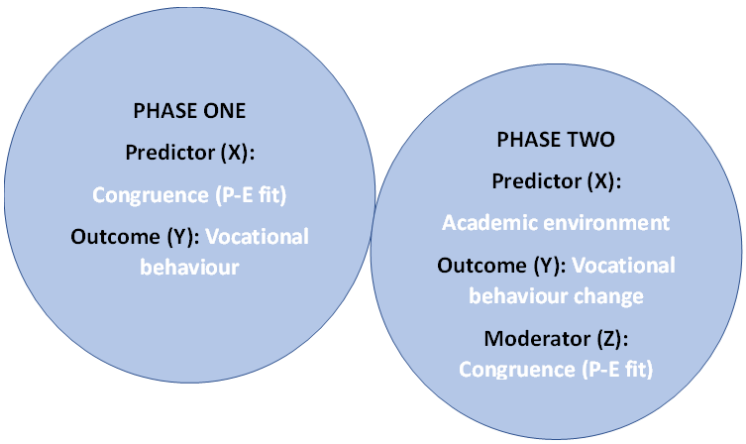


Figure 2 represents the hypothesised model. Note. a = Hypotheses 1 (H1a & H1b); b = Hypotheses 3 (H3a;H3b;H3c;H3d).

The cross-sectional study (Phase One) was intended to establish the baseline vocational behaviour. The Phase Two study was intended to determine the effect of the independent variable i.e., 'environment' (management education) on vocational behaviour change and the effect of congruence (P-E fit) as a moderating variable. A comparison between the Phase One outcome variable (measured baseline vocational behaviour) and the Phase Two outcome variable (measured vocational behaviour change) would indicate a function of exposure to management education over time. The following figure illustrates the relationship between variables as they pertain to Phase One and Phase Two of this study:

Figure 3

Relationship Between Variables of the Study



1.6 Phase Two Study

The following section provides the hooks of the longitudinal study and an account of research aims, intentions and questions of the study. In the context of this study, vocational profiles represented a collection of data on the vocational behaviour of participants. Vocational behaviour was measured using the following indicators: career commitment, vocational identity, work identity and career decision-making self-efficacy.

1.6.1 Hooks of the Study. On Aguinis and Vandenberg's (2014) first question, **"**What is the evidence that the particular question represents a puzzle, conundrum, or point of confusion?" (p. 580), the following two important hooks of the study were pertinent: The first was a perceived missing element in Holland's (1985) theory; and the second, the on-going debate in business schools regarding the most superior type of MBA programme, with some arguing for the continuation of traditional MBA programmes (Baruch et al., 2005; Grey, 2004; Hay & Hodgkinson, 2008) and others calling for the proliferation of specialised MBA programmes with a focus on functional areas of business (Baruch et al., 2005; Kedia & Harveston, 1998).

Hook 1: Holland's Typology (1985) has received support via numerous studies (Nye et al., 2012; Paessler, 2015; Tracey et al., 2014). Therefore, one could say that the theory is correct – if illustrated as a brick wall, it could be described as a solid wall. However, the researcher (Tabane) believed that there was a brick missing in this theory. The missing brick was outlined as follows: Holland (1985) asserted that "Behaviour is determined by an interaction between personality and environment" (p. 4). This study sought to make a theoretical contribution by testing a different statistical direction between the factors of environment, personality and behaviour that comprised Holland's aforementioned main assumption. That is, in contrast to Holland's (1985) assumption (refer to Figure 1 below), the Phase Two study suggested and tested whether P-E fit (congruence) would buffer the impact of the academic environment (management education) on vocational behaviour change.

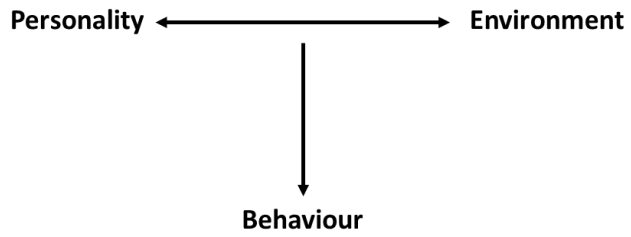
Hook 2: The implication of testing this alternative statistical direction could suggest that academic training programmes are designed in ways that fundamentally benefit some students more than others, owing to the link between programme content and vocational personality type. This would imply that managers might be "made" (vs. born) by the MBA programme, provided that their vocational personality type is responsive to the MBA core course content.

The following path diagrams depict Holland's (1985) assumption (Figure 1) and the researcher's (Tabane's) proposed theoretical contribution (Figure 4) - refer to section 1.7.1 for the theoretical contribution. Figure 4 below clearly illustrates the aims of Phase Two study by juxtaposing the statistical relationships the researcher tested with that of Holland's assumption:

Holland's assumption (1985): "Behaviour is determined by an interaction between personality and environment" (p. 4). The figure below illustrates this assumption:

Figure 1

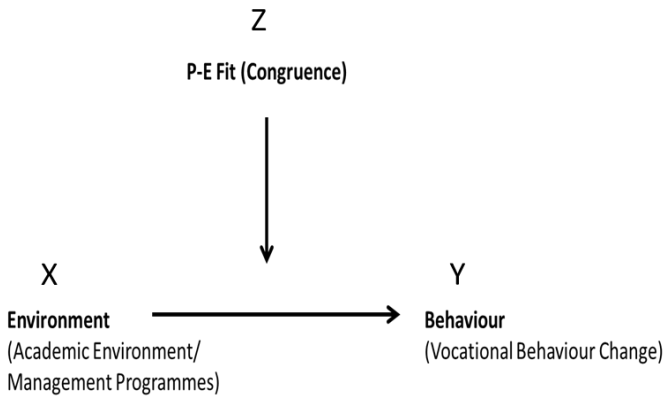
Theoretical Model for Phase One Study



Note: This figure appears as Figure 1 on page 14.

Figure 4

Tabane's (Researcher's) Idea



Note: In Phase Two of the study, P-E fit (congruence) is a moderator; academic environment/management programmes is a predictor and vocational behaviour change is the outcome variable.

1.6.2 Research Intention. Boyce et al. (2010) opine that the idea of leader development for professional self-development has been given little research attention. The authors echo the sentiments of Maurer and Tarulli (1994, as cited in Boyce et al., 2010) and Maurer et al. (2003, as cited in Boyce et al., 2010), who argue that few empirical studies have examined the links between career development constructs and voluntary participation in self-development

initiatives within the organisational context. Furthermore, these researchers assert that research on variables linked to work-related learning and development activities is sparse. In response to the aforementioned gaps in literature, this study focused on MBA/MBL and Specialised Master's candidates who had chosen formal training as a means to catalyse their leader development process. Marais (1979) aimed to uncover the strengths and weaknesses of the University of South Africa School of Business Leadership (SBL) management training programme, conducted via teletuition to upskill the working executive – a first of its kind at the time. According to Marais (1979), the SBL training model for working executives is well-constructed because it entails the following: a mix of classroom and correspondence tuition, study groups held in various locations and frequent study schools based at a central location. The working executive does not need to stop working entirely to receive management education. Marais' (1979, p. 78) teletuition trifecta can be summarized as: "correspondence, study schools and study groups". Students accepted onto the MBL (Master of Business Leadership) are required to have a minimum of 3 years' business experience. The working executive's pursuit of and participation in the SBL training programme may represent a plug of the research gap identified by Boyce et al., 2010).

Wegner et al. (1994) linked management education (applied statistics course) to improved managers' behaviour (i.e., decision-making at work). The authors suggest that statistical courses which target management students should be relevant and useful for practicing management at work (Wegner et al., 1994). The authors highlight the concern that MBA's historically have been blamed for being "knowledgeable" but unable to demonstrate "competency" (ability to apply learnt information). "In order for managers to integrate statistical thinking into the decision-making process, statistical methods and reasoning must be closely integrated with functional management disciplines" (Wegner et al., 1994, p. 92). The authors suggest that statistical methods course design should be "application-based" rather than "technique-driven". They also suggest that curriculum design could pair statistical courses with different functional areas of business. The idea is to enable MBA graduates to feel confident, competent, and familiar with applying statistical techniques to their practice of management and decision-making. Wegner et al. (1994) conclude that modes of disseminating management education must be re-evaluated to ensure that management students grasp their statistics coursework.

The link between management education and job performance, flagged by Wegner et al. (1994) is also highlighted Friis and Smit (2004), who sought to discover if fund performance

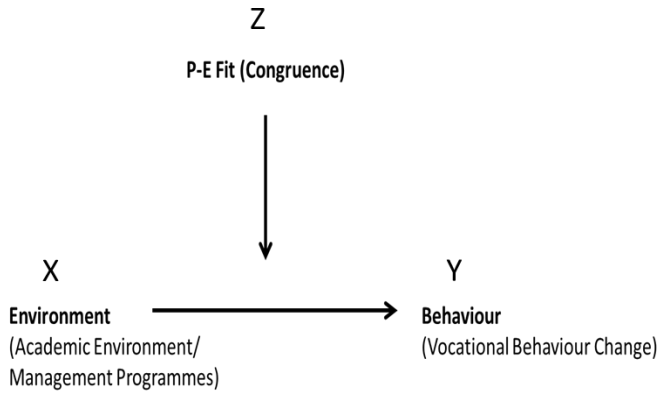
and a bias toward risk taking could be explained by managers' characteristics. Outcomes of the study revealed that managers' qualifications (management training) had an impact on fund performance and riskiness. Superior risk-adjusted performance could be expected from fund managers who hold a CA/CFA qualification. Such managers outperform their counterparts without the same qualification and they accept less risk than managers with an MBA degree. The authors maintain that investors hunt for skilled fund managers because of their specialised knowledge. They have a lot to gain from these managers in terms of quality and consistent fund performance. Fund managers who can 'beat' the system (i.e., outperform the market) by applying appropriate asset allocation and market timing (macro forecasting ability that allows the fund manager to predict future returns of various assets) are the gold standard (Friis & Smit, 2004). The authors identify experience, effort, ability, knowledge and risk preference as fund manager characteristics, which may be tied to fund performance. Data collection and analysis underpins the professional behaviour of these specialists.

The impact of post-graduate education is usually seen after the qualification is obtained and the graduate uses it as personally intended (e.g., to secure a job, to advance to a higher rank within an organisation, acquisition and application of a special skillset, etc.). However, there is a gap for research on the immediate impact and psychological effect of an MBA/MBL programme beyond the classroom (managerial skillset). As such, the study intended to ascertain the association between MBA/MBL core courses (and Specialised Master's' programmes) and the vocational behaviour of students whilst they were still engaged in the learning process. Additionally, this study used Holland's Typology (1985) to unpack the role of P-E fit (congruence) in the relationship between management education and students' vocational behaviour. The implicit question is: "How does the MBA/MBL (and various Specialised Master's' programmes) make me think about my career and my identity?"

Conceptually, Figure 4 below illustrates the statistical directions tested in the Phase Two study; specifically, MBA core courses (and Specialised Master's) as the predictor, vocational behaviour change (variation in the vocational profiles) as the outcome and P-E fit (congruence) as the moderator:

Figure 4

Tabane's (Researcher's) Idea



Note: ***Tabane's idea:*** Testing a moderating effect of P-E fit (congruence) on the hypothesised relationship between academic environment/management programmes and vocational behaviour change.

1.6.3 Research Aims. The aims of Phase Two of the study were the following:

Aim 1: Ascertaining the effect of MBA/MBL core courses and Specialised Master's programmes on students' vocational behaviour change, whilst they are still engaged in the learning process.

Aim 2: Assessing the moderating role of P-E fit (congruence) in the environment-behaviour relationship. Individuals' P-E fit (congruence) may influence the suggested relationship between their academic environment (i.e., MBA/MBL core courses; Specialised Master's programmes) and their behaviour (vocational behaviour change) as measured by the aforementioned indicators.

1.6.4 Research Questions. The key question for the Phase Two study was the following: Can vocational personality (in terms of P-E fit) be viewed as a boundary condition that frames the association between management education and vocational behaviour change? In this regard the following were attendant research questions:

1) What is the effect of MBA/MBL core courses and the Specialised Master's' programmes on students' vocational behaviour change?

2) What is the effect of congruence (P-E fit) on the vocational behaviour change of post-graduate management students in different academic environments?

These research questions sought to clarify whether the interventions (in the form of course work in the management education process) were effective in changing individuals' RIASEC type towards the dominant RIASEC type (as well as changing vocational behaviour). Holland suggests that RIASEC types are malleable, so people would naturally gravitate toward environments that complement their vocational interest/personality. In this way, it was considered that there might be candidates on the management education programmes who might not 'fit' their academic environment.

Figure 5

Theoretical Model for Phase Two Study

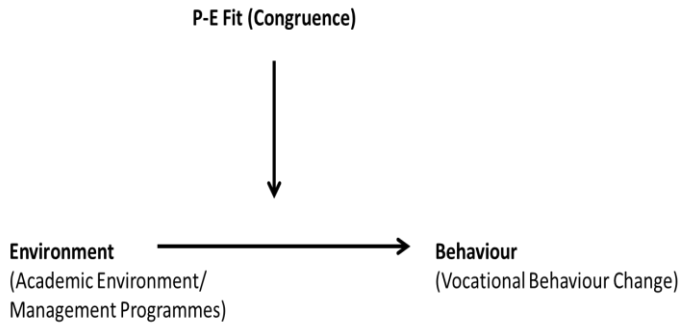


Figure 5 above represents testing a moderating effect of P-E fit (congruence) on the hypothesised relationship between academic environment/management programmes and vocational behaviour change.

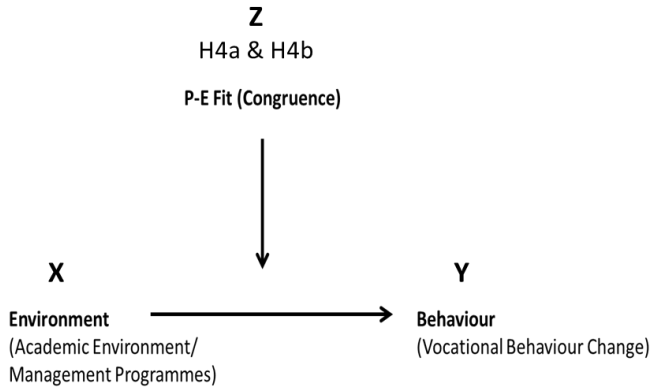
1.6.5 Hypotheses of Phase Two Study. Holland (1985) suggests that environments tend to expel incongruent people. Furthermore, P-E fit (congruence) leads to positive outcomes e.g., vocational choice, vocational stability and achievement, personal competence, educational choice and achievement (Su et al., 2015). Accordingly, the following were the hypotheses of the Phase Two study in which congruence (P-E fit) was framed as a moderator variable, academic environment as a predictor variable and vocational behaviour change as an outcome variable:

H4: Academic environment (management education) changes the levels of post-graduate management students' vocational behaviour indicators.
H4a: The relationship between academic environment (management education) and vocational behaviour change will be *high* for congruent management students.
H4b: The relationship between academic environment (management education) and vocational behaviour change will be *low* for incongruent management students.

Figure 6 below illustrates the hypothesised model for Phase Two study.

Figure 6

Hypothesised Model for Phase Two Study



Note: Z involves Hypotheses H4a & H4b

The hypothesised model for the study was tested.

1.7 Contribution of the Study

Orkibi (2016) examined the moderating effect of the Artistic-Social Personality Type on the burnout-career commitment relationship. The author wanted to determine the buffering function of RIASEC types against the impact of burnout amongst a sample in the creative arts therapy domain. The study was cross-sectional. However, the author recommended that, to enhance the probability of prediction, future studies should employ a longitudinal design with data collection at two time points. The current study investigated the classificatory role of MBA students' vocational personality fit (congruence) with the MBA academic environment in the relationship between their core courses and vocational behaviour. Data were collected at two points and groups typified by a different academic programme from the 'traditional master's programme' (MBA core courses) were used. It was considered that the inclusion of the Specialised Master's groups would enhance the value of this study. For instance, if the hypothesised model was found to work similarly across the different groups of the study, this would suggest the generalizability of the proposed model. Su et al. (2015) assert:

> It is time to move beyond the issue of whether fit–outcome relationships exist and how large they are and start to establish boundary conditions for fit–outcome relationships…That is, we need to turn toward answering the question "when does it matter?" instead of "does fit matter?" (p. 90).

In a sense, this study tried to establish the boundary conditions for the fit-outcome relationship, by identifying the RIASEC types that are most susceptible to the influence of MBA core courses. It specifically paid attention to whether P-E congruence amongst participants of the study affected the impact of their academic environment on their vocational behaviour.

1.7.1 Theoretical Contribution of the Study. The researcher intended to contribute to Holland's (1985) theory by exploring P-E fit (congruence) as a moderator variable of the relationship between MBA core courses (learning environment) and vocational behaviour change (individual behaviour). In other words, the fit between individuals' vocational personality and their chosen academic environment may influence the relationship between their environmental conditions and behaviour. This theoretical contribution contrasted with Holland's (1985) fourth assumption. An interesting question was: Are there certain RIASEC types that will be more susceptible to environmental influences? In this regard it was considered that vocational behaviour change was likely to happen to those whose RIASEC types were responsive to certain environmental factors, such as MBA core courses, more than other types. In relation to the aforementioned question, it was considered that students in an MBA/MBL programme might present with a dispersion of RIASEC types owing to the following factors: their academic backgrounds differ, they occupy different work roles and operate in various employment sectors; some might be specialists (engineers/doctors) aiming to become generalists (general management qualification). Furthermore, unlike a specialist academic qualification in Finance and Investment or Marketing Management, which is directly linked to a specific functional area of business, an MBA qualification is a general management qualification; and there are debates on whether 'management' may be considered a vocation or profession (McKevitt et al., 2017; Rubin & Dierdorff, 2013; Schlegelmilch & Thomas, 2011). Given these considerations, the researcher sought to establish whether students with RIASEC types that were not/less congruent with the code of their chosen academic environment (MBA core courses) would still display vocational behaviour change (if extraneous variables were controlled for). That is, there was a need to establish whether vocational behaviour change associated with MBA core courses would occur for students whose vocational personality was 'incongruent' with the learning environment (operationalised as MBA core courses). This observation relates to Antonakis et al.'s (2010) statement of the counterfactual argument, revisited in the methodology section of this study. The implication of testing this hypothesis was the suggestion that academic training programmes may be designed in ways that fundamentally benefit some students more than others, owing to the link between programme

content and vocational personality type (Hook 2). In the case of management education, the implication is that managers might be "made" (vs. born) by the MBA programme, provided that their vocational personality type is responsive to the MBA core course content. It was considered that some people (not all) with specific vocational personality types would demonstrate behaviour change after exposure to academic training programmes (environmental factors). Practically, such a finding would imply that in addition to the admission criteria in use at business schools, MBA programme applicants would have to be screened to identify their vocational personality type, as it could influence the impact of their academic training on their vocational behaviour. That is, some MBA students would benefit more than others - eventually graduating with a degree and measured vocational behaviour change. This skewed benefit was independent of the MBA students' academic ability as it was assumed that through the selection process, these students would have demonstrated their suitability for the programme and satisfied the selection committee.

In response to the need for support on the impact of curriculum reform on students' attitudinal outcomes, Caza et al. (2015) assessed undergraduate students' experience of an experiential business curriculum. In contrast to graduates of a traditional, functionally structured curriculum, the graduates of the experiential curriculum were highly satisfied, with high levels of career self-efficacy (not leader self-efficacy). Caza et al. (2015) argued that students' self-efficacy and satisfaction would be improved by modern pedagogical reforms (Barber, 2018). The authors viewed Holistic, Experiential Curriculum (HEC) as a composite of functional integration, experiential learning, and soft skills development. There seemed to be some parallels between this study and that of Caza et al. (2015). However, this study presented a new twist in the following ways:

i) the focus of the study was MBA/MBL and Specialised Master's students;
ii) a selection of indicators of vocational behaviour were amongst the variables of the study;
iii) Holland's Typology was used to understand the association between MBA core courses and students' vocational behaviour;
iv) a vital argument of the research was that MBA programmes are inherently biased, serving some students more than others owing to the vocational personality of the students; and
v) this study was cross-sectional and longitudinal in nature.

It appears that both Marais (1979) and Miller (1982) pre-empted the value of modern pedagogical reforms to which Caza et al. (2015) and Barber (2018) alluded. Marais (1979)

highlights the concern that teletuition is viewed as akin to correspondence training which is usually most effective for independent students with an internal locus of control.

Marais (1979) highlights the convenience and utility of technology in management education for working executives. A key implication of such training being that working executives may be able to immediately apply their learning to their daily work on an iterative basis. Similarly, Miller (1982) outlined Computer-aided instruction (CAI) at the University of Cape Town's Graduate School of Business, as a learning process model that leads to effective policy decisions including the value of the technology (CAI modes: simulations, problem-solving and gaming) for imparting learning.

Icli and Anil (2014) attribute students' motivation and course satisfaction to lecturer-student communication. They describe a "productive learning environment" for both management students and academics as a confluence of computer-aided education, video-conferencing, internet-based education, distance learning and course software. These factors promote efficiency. Icil and Anil (2014) maintain that educational productivity hinges on such resources (improved technology) and therefore, institutions of higher learning should be well-funded in this regard.

Tracey et al. (2012) examined the relationship between interest–major congruence and college outcomes (grade point average at various points and various indicators of persistence). The authors hypothesised that environmental constraints and individual flexibility would moderate the congruence–outcome relation. Environmental constraints were defined by a variance in the RIASEC scores for individuals in each major, where 'weak' environments were typified by a dispersion of interest patterns, and 'strong' environments were populated by individuals with homogenous interest patterns. Tracey et al. (2012) comment that the idea of the moderation of personality–behaviour relation by environmental strength is upheld by indirect evidence owing to difficulties in operationalising environmental strength and measuring the individual and environment components of P-E fit. The authors hypothesised that college success (indicated by grade point average and persistence) would be higher for individuals that fit strong environments, whereas a weak association between P–E congruence and college success was expected for those in weak environments. Regarding the moderating role of individual flexibility, a stronger relation between P–E congruence and college outcomes would be displayed amongst less flexible students i.e., those with lower interest levels, whereas for individuals with higher interest levels, congruence would matter less with regard to the

outcome of persistence. Findings suggested that for both types of congruence indices employed by the researchers, environmental constraint (of the major) and individuals' interest flexibility moderated the congruence-outcome association. For majors that had greater homogeneity, a stronger association between congruence and college outcomes was found. Moreover, the congruence-outcome relationship was stronger for individuals with lower flexibility. There are some parallels between this study and that of Tracey et al. (2012), in that the authors' environmental descriptors of 'weak' and 'strong' underpinned the distinction the researcher made between the anticipated dispersion of RIASEC types amongst the MBA/MBL and Specialised Master's groups respectively. Moreover, the authors investigated RIASEC types (framed as environmental constraint) as moderators in their study. However, the originality and contribution of this study remained intact. Firstly, this study was based on different outcome variables (indicators of vocational behaviour). Using a sample of post-graduate students with work experience, it sought to ascertain the impact of a specific academic environment (MBA/MBL core courses) on students' vocational behaviour by employing groups typified by a distinct academic environment (e.g., MMFI/MCom. in Financial Management Sciences, MCom. Marketing Management) to test the generalizability of the hypothesised model. P-E fit (congruence) was employed as a moderator variable in the Phase Two study. Furthermore, it had practical implications for various stakeholders, i.e., MBA/MBL graduates (alternative measure of ROI; job market visibility), Business Schools (refined MBA selection criteria; improved brand) and employers (quality assurance regarding recruitment of talent and investment in the career development of their workforce).

1.7.2 Practical Value of the Study. Aguinis and Vandenberg's (2014) second question, "What is the evidence that the chosen research question represents an important challenge in the field?" (p. 580), is vital in the current study. The MBA could be associated with measured vocational behaviour change, through its relationship with the specified psychological factors (a combination of the aforementioned vocational behaviour indicators). In this regard, the practical value of this study for career counsellors and industrial psychologists would be the ability to advise (through vocational guidance and counselling) people with management training in different functional areas of business on how to improve their vocational status. Icli and Anil (2014) assert that career counselling services add to the students' MBA experience and satisfaction with their education. Additionally, they argue that business schools and universities should publicize statistics of their students with prominent careers and employment figures as a drawcard for prospective MBA students. The value of a

'psychological component' (career counselling services/vocational guidance) attached to management education, is recognized by students, business schools, governance schools and universities alike.

Aguinis and Vandenberg (2014) highlight the adoption of a design-science approach as an attractive feature of quality research. They ask: "Does the research…address not only what is but also what can be (i.e., preferred futures)?" (p. 573). This study potentially provides an alternative way to measure the return on investment (ROI) of the MBA/MBL programme i.e., vocational behaviour change, a concern outlined earlier in this document. The practical value of this study for Business Schools is as follows: throughput of students is a concern for these institutions. Therefore, they might find it useful to get a profile of the kinds (vocational personality indicated by RIASEC type) of students who are likely to get the most out of the academic offerings i.e., graduating with the MBA/MBL degree and measured vocational behaviour change. Service quality could be perceived as an indicator of the return on investment (ROI) of an MBA/MBL programme. Icli and Anil (2014) concede that there is an unresolved debate regarding the best definition of 'service quality' in higher education; as such its measurement has been controversial. Icli and Anil (2014) introduce the HEDQUAL Scale as an instrument to measure MBA programme service quality in the higher education sector. The authors noted that students' expectations of service quality differ in accordance with different levels of education (e.g., MBA and Ph.D.) across universities. In this regard, they aimed to develop and validate a new instrument (HEDQUAL) towards the measurement of service quality specifically tied to MBA programmes (Icli & Anil, 2014). Exploratory and confirmatory factor analysis was applied to the 36-item questionnaire to assess unidimensionality, validity and reliability. 317 useful questionnaires were collected. Icli and Anil (2014) indicated that the model's goodness-of-fit indices were appropriate suggesting that the model closely fit the data. There were five key dimensions of service quality viz., academic quality, administrative service quality, library services quality, quality of providing career opportunities, and supporting services quality. The authors concluded that the 26-item HEDQUAL Scale was found to be an appropriate scale for the measurement of service quality for MBA programmes, after several tests (e.g., normality, reliability, validity and unidimensionality) were conducted.

Academic quality of lecturers and staff present as the most salient determinant of students' satisfaction with their universities. Moreover, lecturers who continue to upskill themselves, conduct research and uncover new information help to enhance students'

confidence in their institution and respect that they have for their education providers (Icli & Anil, 2014). Well-trained, problem-solving and efficient administrative staff enhance the students' experience and confidence in the institution's administrative capabilities. The educational environment (supportive services quality) must be well-resourced i.e., access to computer labs, IT, distance learning facilities, video conferencing (Icli & Anil, 2014).

Bisschoff (2005) sought to put forward a preliminary model geared towards predicting academic success of prospective MBA students. Historical/archival academic performance data of 729 MBA students who were enrolled at Potchefstroom Business School between 1999 to 2001 were used. The model may be considered as a quantitative method to separate prospective high performing students from those who would likely drop out of an MBA programme. Discriminant analysis was used to segment the MBA applicants into three groups: a "Low-to-no-risk" group included candidates likely to graduate in 3 years; a "Medium-to-low-risk" group included students who extended their studies to 4 years; and a "High-risk" group comprised those who failed/dropped out. The discriminant function was reliable and correctly categorized the MBA applicants into their respective groups, as follows: completed their MBA in 3 years 71% correctly classified; completed their MBA in 4 years (62% correctly classified); and dropped out of the MBA programme (83% correctly classified). Bisschoff (2005) argues that the "High-risk" group should not be admitted onto the MBA programme. For the "Low-to-no-risk" group (high performers), Bisschoff's (2005) model could signal a potential ROI for MBA applicants.

Bisschoff (2005) maintained that the decision to accept MBA applicants onto their chosen programme is a composite of their admission test results and a "qualitative"/subjective assessment of the admissions panel to accept the candidate. Moreover, the MBA admission process could further be improved by applying discriminant function analysis to categorise applicants into the aforementioned groups as a method of quality assurance in decision-making. Bisschoff (2005) concludes by indicting that the proposed model should be further researched using a larger sample from several business schools for a more 'generic' appeal. This author maintains that the categories established would become increasingly important when spaces on MBA programmes are limited, thereby necessitating the selection of high-quality candidates who would pass rather than fail. This could also save "High-risk" applicants the psychological anguish of failing, dropping out, wasting their time and money. Related to this is the differentiation of Business Schools' brands via refinement of their MBA/MBL selection criteria. Accordingly, Business Schools that are aware of the specific vocational personalities

that reap the most benefits from their academic programmes can amend their value proposition to highlight the fact that they deliver unique programmes (with measured psychological effects) that target a unique sect of graduate management students. This is sure to excite employers who are clamouring for top talent and require assurance that the MBA/MBL graduates they hire are a cut above the rest. Similarly, such employers might be driven to invest in MBA/MBL education to promote career development amongst their workforce, for the reasons outlined above. Taken together, these practical implications, rooted in the first hypothesis of the study, serve to emphasise the salience of the MBA/MBL programme, legitimising its designation as a "flagship programme". In light of refined MBA/MBL selection criteria post-research, the practical spin-off for students would be greater visibility in the job market, given the graduate brand's emphasis on certain vocational personality types. Moreover, prospective students that apply for MBA/MBL programmes may be informed, ahead of time, of the extent to which they can expect to reap the benefits of the programme (given their measured vocational personality types) should their applications be successful.

This study provided a 'snapshot' of the calibre of students that were admitted into management academic programmes (MBA/MBL and Specialised Master's) before their behaviours were presumably shaped by, inter alia, the education they received at the Business School/Universities. This snapshot gave one a raw picture of the "untrained" (in the formal/academic sense) manager – the type of student that is typically attracted to a management qualification. From a developmental perspective, it would be useful to compare the initial snapshot to a snapshot taken well after the respondents have completed their academic training and succeeded in making the career transitions they intended. Interestingly, Bisschoff's (2005) model ("Low-to-no-risk"; "Medium-to-low-risk"; and "High-risk" MBA applicants) would offer a clearer 'snapshot' of the aspiring and untrained manager. The value of Discriminant Analysis in the categorization of these applicants is apparent, as it highlights a money-saving opportunity for high-risk applicants, who would pursue MBA studies only to drop out. The sample's vocational profile informed the researcher about the state of their career development. This information may leave a space open for management education to intervene. An indication of the vocational identity, work identity, career commitment and career decision-making self-efficacy of respondents was obtained, which had implications for, inter alia, their suitability/readiness for management roles, their effectiveness as workers, their needs in the workplace and their potential for success regarding future career development. The problems that plague South African MBA programmes are explored by Harari and Beaty (1986). They

state that the African school of thought holds that business and management education should encompass socialist doctrines, integrating political ideologies with traditional ('western') business skills and knowledge that stem from western MBA programmes (Harari & Beaty, 1986). In order to be useful/relevant, the western MBA must be rooted in the social and political ideologies that characterize the African government in power. Harari and Beaty (1986) maintain that globally, there is a need for context-specific, differentiated managerial styles and philosophies that suit the zeitgeist (i.e., the intellectual, moral and cultural climate of an era) of each country. Within the African school of thought, a trained manager is required to comprehend and start business tasks that reinforce community, social and political goals of the state. According to Harari and Beaty (1986, p. 18), this behaviour/orientation is contrary to Western "sound managerial practice". The 'successful 3rd world manager' must capably catalyse and manage government relations in addition to mastering traditional management skills. Harari and Beaty (1986) maintain that South African MBA programmes are "delusional" in that they seem to produce managers who would be better suited to practice in America or Europe. In South Africa, managers are faced with 'intense' and 'explosive' issues that require commitment, risk-taking and intuition rather than a 'conservative', 'analytical' problem-solving approach. Harari and Beaty (1986) maintain that MBA students' training should enable them to make good decisions within a volatile political and socio-economic environment.

From a practical perspective, the following insights could be gained: In the case of a negative vocational profile, insight could be obtained into the vocational issues that might negatively influence a manager's approach to work. By way of contrast, insight into the most advantageous vocational profile a manager should have (good commitment, strong vocational and work identity, and sound career decision-making self-efficacy) could also be gained. An *Ideal Vocational Behaviour Profile* in the study would be one where a participant displays high levels of all the indicators of vocational behaviour, viz., career decision-making self-efficacy, work identity, career commitment, strong vocational identity and a well-differentiated vocational interest/personality. Furthermore, the positive aspects of the vocational profiles were assessed to see if management education is sufficiently capitalising on them in terms of its offering to students.

The combination of variables used in this study was unique, considering that the variables were applied in business school, school of governance and university settings amongst management students. What is more, the study's sample was diverse insofar as it was not restricted to a single profession e.g., Engineering or industry sector e.g., Healthcare.

1.8 Chapter Summary

A study towards a contribution to Holland's Typology is introduced. Holland's (1985) theoretical framework, which underpins the study, is used. The effect of post-graduate management education on vocational behaviour is the context of the study. The business school provides the Enterprising academic environment, whilst the school of governance provides the Social academic environment. The research focuses on the impact of management education on psychological behaviour. The research objectives and questions, and the hypothesised models for the phases of the study are laid out. The variables of the study include management education (independent variable), vocational behaviour (dependent variable), vocational behaviour change (dependent variable) and congruence (moderator variable). The theoretical contribution of the study is given.

1.9 Chapter Outline

The research report is presented in five chapters.

Chapter 1: Introduction – this chapter provides the background information on the study topic, a problem statement, the research intention, the research questions and aims of the study.

Chapter 2: Literature Review – this chapter covers relevant literature on business administration and management (the private sector) and also public administration and management (the public sector).

Chapter 3: Research Methodology – this chapter includes a description of the samples (research participants), the operational definition of the variable (vocational behaviour), the procedure for implementing the treatment of the groups, the measuring instruments and data capturing process; and data analyses.

Chapter 4: Research Results – this chapter provides the results of all data analyses with statistical details for Phase One and Phase Two of the study.

Chapter 5: Discussion – the discussion includes interpretations of research outcomes and addresses the research questions posed in the two phases of the study. The discussion of how the study contributes to the general body of knowledge on the topic is presented.

CHAPTER 2

LITERATURE REVIEW

This chapter considers the literature on the impact of post-graduate management education, including the Master of Business Administration and Specialised Master's degree programmes, on vocational behaviour i.e., the psychological impact of management education. The following quote outlines a gap in literature on the exploration of the impact of interest congruence on psychological behaviour. Importantly, it succinctly emphasises the relevance and value of the current study, which examines the manner in which P-E fit (congruence) affects vocational behaviour. "Finally, and perhaps foremost, it is necessary to avidly explore the utility of vocational interest measures for predicting academic performance, work performance, and how interest congruence affects psychological well-being" (Chernyshenko et al., 2019, p. 92). Considering the aforementioned statement by Chernyshenko et al. (2019, p. 92), in Phase One of this study, "congruence (P-E fit)" is the predictor variable and "vocational behaviour" the outcome variable. In Phase Two of the study, "academic environment" the predictor variable, whilst "congruence (P-E fit)" is the moderator variable and "vocational behaviour change" is the outcome variable.

2.1 Master of Business Administration

Rubin and Dierdorff (2013) state that historically, the Master of Business Administration (hereafter referred to as MBA), was designed to impart functional knowledge on and skills in people management to persons who were technically competent in a specific occupational context, e.g. engineers (Pounder & Ross, 2018; Stoten, 2018). This means that the MBA degree by design can be generalised across occupations, organisations and industries, allowing graduates the opportunity to gather broad knowledge on the functional areas of business. The value of and need for the MBA are the subjects of a raging debate as spelt out in subsequent sections. Datar et al. (2011) opine that business schools have to rethink the MBA (Barber, 2018; Caza et al., 2015). In this regard, Datar et al. (2011) propose a two-pronged roadmap for change: i) reassessment of the facts, frameworks, and theories being taught (the "knowing" aspect); and ii) realigning curricula to emphasise the development of skills, capabilities and techniques which are the crux of the practice of management (the "doing" component) and the values, attitudes and beliefs which comprise the world views and professional identities of managers (the "being" component). On the other hand, Schlegelmilch and Thomas (2011) question whether we will still have the MBA in the year 2020. They argue

that MBA programme curricula must be re-mastered to produce graduates who are analytically capable, managerially skilled and ethically conscious, a view that is shared by Gupta and Bennett (2014). Schlegelmilch and Thomas (2011) call for institutions such as the Association to Advance Collegiate Schools of Business (AACSB), the European Foundation for Management Development (EFMD), European Quality Improvement System (EQUIS), the Association of MBAs (AMBA) and the Graduate Management Admission Council (GMAC) to scrutinize the future role of business schools in the global village. They conclude that the MBA will survive but will have to change, a catalyst of this change being an open debate on management as a profession. Schlegelmilch and Thomas (2011) state that professional and responsible managers would be in demand in years to come, a view that is widely shared (Barber, 2018; Gupta & Bennett, 2014; Pounder & Ross, 2018; Stoten, 2018). Tuval-Mashiach (2017, as cited in Winiarska, 2017) outlines the 'professional' manager's role, at the centre of which is the practice of 'reflexivity'. However, on the call to professionalise the area of management, Rubin and Dierdorff (2013) had this to say:

> The promise of professionalizing the managerial role has been at best derailed and at worst entirely undermined… Over the decades, the utility of business schools to improve people's economic standing and expansion of their social networks has come to overshadow the professional ideals upon which the institution was founded (p. 134).

Barber (2018) endorses the concern of Rubin and Dierdorff (2013).

There are many debates around the value of an MBA (Barber, 2018; Baruch, 2009; Byrkjeflot, 2003; Kumar, 2015; Pounder & Ross, 2018; Stoten, 2018). However, to bring order to the chaos, it is important to reflect on the MBA in terms of 'who it serves' - organisations, students or business schools? They all have a stake in management education (Starkey & Madan, 2001; Trank & Rynes, 2003). There is value for employers in hiring business school graduates. According to the Graduate Management Admission Council's (GMAC) 2016 Year-End Employer Poll Report, 2017 looked promising for business school graduate job-seekers, seeing that 83% of surveyed companies intended to hire such graduates. Approximately 8 out of 10 employers hoped to hire MBA graduates in 2017. Moreover, Master's graduates in management and accounting could expect to find placement with a third of these employers. The MBA degree remains popular but interestingly, in 2016 51% of Master in Management programmes enjoyed a growth in demand by prospective candidates, after years of declining application rates (GMAC 2016 Application Trends Survey). On the return on investment (ROI) for graduates, the GMAC 2016 Alumni Perspectives Survey indicated that alumni's decision

to invest in graduate management education was influenced by non-financial criteria. The key application factors they considered were as follows: 73% of alumni considered the opportunity for personal development; 62% reflected on the idea of expanding their knowledge and skills; whilst 59% considered the salary increase.

GMAC data on business school alumni entrepreneurs (2016 Alumni Perspectives Survey Report) suggest that 96% of these individuals rate the value of their business school experience favourably, with 92% viewing their education as personally rewarding, 89% viewing it as professionally rewarding and 75% finding it financially worthwhile. These alumni entrepreneurs report a Net Promoter Score (NPS) of +51, which indicates their levels of customer loyalty towards graduate management education. This NPS score exceeds that of the general population of business school alumni, viz., +45. Furthermore, 94% of alumni entrepreneurs report that they would return to their business schools because of the analytical skills and leadership abilities they acquired from these institutions. For business schools to survive in a competitive global graduate management education market, they must go beyond articulating their value proposition. This requires tapping into the psychological make-up of prospective candidates. A study commissioned in 2016 by GMAC (2016 GMAC Global Graduate Management Education Segmentation Study) aimed to stratify segments of Graduate Management Education (GME) candidates, based on the factors that motivate them to pursue GME and drive their applications to specific business schools. With such findings, business schools could develop recruitment and marketing strategies that are rooted in the candidates' motivation, inspiring them to follow up with the schools, inquire about their offerings and apply.

Business schools pride themselves on their 'flagship programme'. In this regard, MBA programmes are usually their drawcard. Accreditation is considered paramount for business schools to establish a revered brand and compete with the best in the world. Triple Accreditation denotes endorsements from three of the most respected agencies, viz., Association to Advance Collegiate Schools of Business (AACSB), European Quality Improvement System (EQUIS) and the Association of MBAs (AMBA). Students, the business school and employers each stand to benefit from this accreditation – by enjoying a business education with enduring value, an image of compliance with world-class standards and processes, as well as a stellar talent pipeline with matching qualifications. Application trends indicate the demand for graduate management education, signifying the vitality of business schools. At a glance, 2016 business schools' application trends indicated a rise in the following

programme types: Full-time one-year MBA, Online MBA, Executive MBA, Master in Management, Master of Finance and Master in Data Analytics. On the other hand, the following programme types reported declines in application volume: Full-time two-year MBA, Part-time MBA, Flexible MBA and Master of Accounting (GMAC 2016 Application Trends Survey Report).

It is clear that the MBA is still a topic worth investigating. On the one hand scholars continue to reimagine the MBA and repackage it in a way that would have it benefit both graduates and business. On the other hand, MBA accreditation bodies remain hard at work to safeguard the quality of these programmes and by extension, improve the brand of compliant business schools. There is perceived value in the MBA for multiple stakeholders.The following section outlines critical issues associated with the MBA programme and its candidates. Accordingly, the criticisms levelled against MBA programmes, the big debate concerning the traditional MBA versus Specialised Master's programmes, and research on the psychological impact of MBA programmes are presented.

2.1.1 Criticisms Levelled against MBA Programmes. A study by Yang and Lu (2001) on the predictors of academic performance on an MBA programme, found that undergraduate grade point average (undergraduate performance) was the most salient predictor of graduate academic performance. Scores on the Graduate Management Admission Test also significantly predicted academic performance on an accredited MBA programme. Age and gender had no effect on graduate academic performance. Yang and Lu (2001) asserted that career success and the management performance of MBA graduates in practice cannot be completely explained by their academic performance, given the following research finding: a small percentage of variance in academic performance is attributable to previous learning outcomes such as undergraduate grade point averages and Graduate Management Admission Test scores. The authors recommended that future studies should investigate the predictive power of 'learning motivation' and 'working experience' variables when researching factors which contribute to MBA success.

On the idea of enhancing the management effectiveness of MBA graduates, Boyatzis et al. (2002) cite the development of the ability to use management knowledge as a major challenge in MBA education. Using a synthesis of cross-sectional and longitudinal, time-series data collected for purposes of a 50-year study of MBA students, the authors revealed that MBA students can develop cognitive and emotional intelligence competencies, which are vital for

their effectiveness as managers and leaders, albeit outside of a typical MBA curriculum. On the theme of MBA curricula, the need for intervention and innovation in management education and development is advanced by Mintzberg (2004), who argues that change is required due to:

- the discord between management education and the practice of management (Schlegelmilch and Thomas, 2011, concur); and
- the lack of effective management practices.

This accounts for the inconsistency in performance and sometimes failure of MBA graduates in a real business context. Barber (2018) concurs. Mintzberg (2004) further argues that effective management education should be 'impactful' i.e., it should involve an action impact component, which improves something in the organisation; and a teaching impact component, which allows for the transmission and sharing of knowledge amongst groups. The author captures the symbiotic relationship between management development and organisational development in the following quote: "To develop better managers is one thing; to develop better organisations in the process of developing better managers, rather than as a consequence of developing them, is quite another" (Mintzberg, 2004, p. 336). Barber (2018) asserts that managers' roles, including an appropriate skillset for the fourth industrial workplace, remain in flux. The author argues that 'innovative executive education' within this volatile context would be valuable. Similarly, Stoten (2018) advocates an MBA that is 'fit for use'.

It is implied that the development of managers should occur through the development of organisations. Grey (2004) opines that management techniques are always disputed because a one-size-fits-all approach to practical challenges faced by managers on the job does not exist. It is the context-specificity of management which makes it difficult to provide ready-made solutions to all problems. For instance, Kumar (2015) advocates a tailored MBA that is context-specific to Mauritian students' needs, whereas Pounder and Ross (2018) conclude with a statement indicating the need for the propagation of leadership education to be amplified in Caribbean and Central American MBA programmes. Therefore, Grey (2004) challenges the belief that a set of reliable management techniques will soon be developed and can be learnt by management students. At the heart of this criticism is the issue of the flawed 'logic of transferability', which states that it is possible to provide 'generalisable knowledge'. According to Cunliffe (2002, as cited in Hay & Hodgkinson, 2008), experiential learning, specifically the

act of "self-reflexivity" – a questioning of one's ways of making sense of the world – enables managers to develop a critical practice rooted in their experience. Tuval-Mashiach (2017, as cited in Winiarska, 2017) outlines self-reflexivity (where the researcher reflects on their impact on the research, e.g., through decisions made and dilemmas faced), and the communication of the reflection to the research participants, as two key features of 'transparency'. Self-reflexivity is not an introspective task confined to researchers alone; this 'sense-making' process is also valuable to managers, who have formal academic training and workplace training/institutional knowledge and operate within organisations that are in continuous flux. This kind of introspection categorises and personalises a manager's daily experiences on-the-job as they interact with colleagues within the organisation and as they reflect on the manner in which their working environment (socially and technically) impacts their personality and vice-versa.

MBA programmes have been criticised for their poor relationship to the practice of management. In this regard, Critical Management Education (CME) has been put forward as a solution (Hay & Hodgkinson, 2008). Simpson (2006) opines that CME stems from a tradition called Critical Management Studies (CMS), central to which is the critical analysis of the moral and political underpinnings of the values and practices of management. CME thus challenges the biases and assumptions of management education – it stresses a reflexive and critical inclination. According to Grey (2004), CMS denotes a highly politicised idea of management studies. The author argues that although it purports not to be, management is largely devoid of neutrality, given that it is founded on political and moral values. It is suggested that CMS clouds the scientific aspect of management studies because it does not separate 'fact' from 'value'. Grey (2004) challenges the supposedly 'scientific' approach of management studies, as he points out that such studies are subject to the influence of private corporations and the competitive market economy. He goes on to argue that values are inscribed in the domain of management even though they might not be acknowledged. For instance, the author argues that the value of 'power' is enmeshed in the act of managing i.e., getting people to comply according to established management structures.

Grey (2004) writes "…business schools will have to make far less grandiose claims about their product than has been the case in the past" (p. 184). The author cites the opinion of Pfeffer and Fong (2002) that management education does not make better managers, due to the nature of the activity of management as opposed to the shortcomings of management education. Hay and Hodgkinson (2008) and Barber (2018) acknowledge Grey's (2004) view that MBA programmes are being overrated in terms of their value. This argument holds that most learning

regarding the practice of management happens informally. According to Watson and Harris (1999), managing is akin to learning how to swim – "nobody ever learnt to swim without entering the water" (p. 108, as cited in Hay & Hodgkinson, 2008). Grey (2004) offers the following CME solution to the criticism of management education lacking proximity to the reality of the practice of management: values should be integrated into management teachings and discussed in the classroom, as they are central to the practice of management**.** CME purports to prepare managers for the practice of management and sensitise them to the realities on the ground. Grey (2004) suggests that CME has practical relevance as organisations tend to be scrutinised on moral and political grounds – values which the CME perspective acknowledges. The CME perspective argues that current management education ideas are not complex enough and largely rely on knowledge structures that have long been disputed. In a sense, the author argues that management education has failed to keep up with the practical developments in the practice of management. Management education is criticised for purporting to teach 'fact' when it actually teaches 'value' as a result of its susceptibility to the influence of corporate interests and the values of the free market.

According to Hay and Hodgkinson (2008), a critical approach to management education would call for a redefinition of learning content (what is to be learned) and the manner in which the content should be learned – a 'critical pedagogy', so to speak. Moreover, CME entails critical self-reflection on the practice of management and its context. The authors concede that the concept of CME is not new; however, it needs to be brought into the mainstream – lived experience may enhance the value of CME.

Kedia and Harveston (1998) suggest transformations required to make MBA programmes responsive to the needs of American industry and business. In this regard, they propose a new type of business education that promotes the relationship between industry and the university by merging teaching, research and practice, and which also produces 'effective leaders' rather than 'efficient administrators'. These authors highlight a skills deficiency in managers regarding their ability to deal with organisational complexities within the international context. They, along with Pounder and Ross (2018), call for 'globally competent' managers. Interestingly, Barber (2018) echoes this skills-gap concern on the part of managers who require environment-appropriate skills in the fourth industrial workplace. Kedia and Harveston's (1998) article raises the following issues: i) raising the profile and increasing the relevance of existing MBA programmes, as traditional MBA programmes are being challenged by corporate universities offering similar education; ii) inclusion of a cultural component

(language and cross-cultural seminars) in the MBA programme to introduce students to the cultural dynamics of business; and iii) offering management education that is tailored to a specific organisation's needs. These authors conclude that there is no panacea for management education problems; as a result, business schools should examine their resources and constraints with the aim of compiling a unique academic offering that is responsive to industry's needs in a national and global context.

Still on the idea that management education should be re-invented as times change, Dunne and Martin (2006) propose the concept of 'design thinking', an approach to managerial problems that is akin to the approach used by designers when they are faced with design problems. The design thinking paradigm encourages students to think laterally about problems, understand users and acknowledge the value of others' contributions. According to Roger Martin, the Dean of the Rotman School of Management at the University of Toronto, the design thinking approach offers a solution to the criticisms levelled against MBA programmes. In an article themed "Executive education for the fourth Industrial Revolution", Barber (2018) highlights the irony of universities worldwide claiming that their MBA programmes are "transformative", whilst depending on traditional and "retrospective" curricula and assessment practices. Barber (2018) laments that the MBA is regarded by some as a glorified programme, only useful for its perceived prestige. The author argues that non-elitist MBA programmes, which put a premium on the development of students' cognitive ability, are required. According to this author, the hallmarks of a 'transformative MBA' are 'intellectual creativity' and 'problem solving'. The endgame of the 'transformed MBA' within the workplace is 'professional innovation'.

MBA programmes have also been criticised for emphasising quantitative skills at the expense of soft skills, i.e., interpersonal and leadership skills (Mintzberg, 2004). CME views the practice of management as a composite of social, political, moral and emotional facets and in this light, suggests that it would be difficult to come across a body of knowledge that imparts a skillset which accounts for all of the aforementioned facets. According to Hay & Hodgkinson (2008), management education should be viewed as a vehicle to help managers grasp, assess and challenge the task of management rather than as skillsets/techniques that can be acquired and subsequently applied. The authors maintain that the critiques levelled against management education are oversimplifications of management practice and its relationship with management education. They therefore argue that MBA learning is in fact useful to the practising manager.

In an article titled "Reforming the MBA: A survey of elite British Universities", Stoten (2018) acknowledges that there have been criticisms hurled at MBA programmes. The article investigates elite British business schools' responses to the reproaches. The research outcome reflects British business schools as hubs of diversity and creativity. Remaining on the business schools' agenda is the training of MBA students for senior management positions. Stoten (2018) locates this study in the research context of the MBA as a 'premier qualification' for senior managers. The author outlines the evolution of the MBA against the backdrop of criticism. Moreover, the author acknowledges that an MBA should be 'fit for purpose' and concludes that great strides have been made in the United Kingdom towards this ideal. In response to the the criticism that MBA programmes are only vaguely linked to the reality of the practice of management, Hay and Hodgkinson (2008) posit that it is important to obtain the views of graduates who have undertaken an MBA programme in order to ascertain the impact of their studies on their practice as managers. In a similar vein, the current study seeks to investigate the impact of management education (independent variable) on the vocational behaviour (dependent variable) of MBA/MBL and Specialised Master's candidates. The writer perceives that there is a gap for research on the immediate impact and psychological effect of an MBA/MBL and Specialised Master's programme beyond the classroom (managerial skillset).

The current MBA programmes largely involve management education and management development (Grey, 2004; Hay & Hodgkinson, 2008; Mintzberg, 2004; Schlegelmilch & Thomas, 2011; Simpson, 2006), and leader development that is tailored to organisations' needs in a national and global context (Kedia & Harveston, 1998; Pounder & Ross, 2018). Pounder and Ross (2018) assert that the development of effective international leaders is contingent on MBA programmes. Their foci are 'global leaders' and 'global leadership'. Their study assessed 34 Caribbean and Central American MBA programmes. The authors aimed to establish the effectiveness of MBA programmes with regard to preparing students for leadership roles and positively impacting international business. Similar to previous studies, they sought to evaluate the utility of an MBA using the following criteria: programme length and quality, programme availability and entry requirements, cost, courses and target market. MBA programmes were compared for characteristic similarities and differences. Results indicated that MBA programmes share specific learning/teaching core areas, e.g., Marketing & Market Research and Logistics Management. Although MBA

programmes varied in some respects, similarities regarding entry requirements were observed. Course load and description did not vary significantly (Pounder & Ross, 2018).

2.1.2 The Big Debate: Traditional MBA or Specialised Master's Programme? The distinction between a traditional MBA and Specialised Master's programmes is that the former is geared to promoting graduates' careers (higher earnings and promotions), whilst the latter is designed to deepen students' competence in a specific area (Baruch et al., 2005). Barber (2018) maintains that 'intellectual creativity' and 'problem solving' are the hallmarks of a 'transformative MBA'. Gupta et al. (2007) argue that some MBA candidates prioritise the career advancement aspect of the programme above its knowledge function. Accordingly, Barber (2018) has raised the concern that for some the MBA is simply a glorified programme, only valued for its perceived prestige. There is an argument for pedagogical changes in business school curricula (Caza et al., 2015), for example the amplification of leadership education as suggested by Pounder and Ross (2018). However, linked to this argument is the contest between traditional MBA programme curricula versus those of function-centric/Specialised Master's programmes (Baruch et al., 2005; Kumar, 2015). In this regard, it is acknowledged that prospective students of management education have toiled with the question of "which programme is the best for my career development?". It is clear that academic programme choice is considered, inter alia, in relation to career development goals. By extension, these prospective students ask themselves whether a career as a specialist will serve them better than that of a generalist (Baruch et al., 2005).

In response to the need for support on the impact of curriculum reform on students' attitudinal outcomes, Caza et al. (2015) assessed undergraduate students' experience of an experiential business curriculum. In contrast to graduates of a traditional functionally structured curriculum, the graduates of the experiential curriculum were highly satisfied with high levels of career self-efficacy (not leader self-efficacy). Caza et al. (2015) argued that students' self-efficacy and satisfaction would be improved by modern pedagogical reforms. The authors view Holistic, Experiential Curriculum (HEC) as a composite of functional integration, experiential learning, and soft skills development (p. 76).

Baruch et al. (2005) conducted a longitudinal study, using alumni of MBA and Specialised Master's programmes, to compare the outcomes of the generalist MBA with those of specialised graduate programmes. The authors tested the following hypotheses:

- The impact of MBA studies will be significantly more positive than the impact of specialty graduate business degrees in terms of future career success and market-value capital; and
- Graduate business degrees will lead to positive outcomes in terms of performance, self-efficacy, income, and career success.

Findings suggested that both MBA and specialist programmes were similar in value-add. Unexpectedly, MBA respondents reported higher levels of perceived higher scholastic knowledge, whilst specialty degree respondents reported higher levels of social capital than MBAs. Rubin and Dierdorff (2013) allude to the dilemma that an MBA qualification might be redundant in the sense that Specialist Master's programmes, by design, have tried to go beyond the standard MBA training. However, this specialist focus departs from the general management model, effectively exaggerating the misalignment between management education and the practice of management.

Studies indicate that MBA is geared to promoting graduates' career development whilst Professional Master's programmes are designed to deepen students' knowledge and competence in a specific area (Baruch et al., 2005; Gupta et al., 2007; Kumar, 2015). Baruch et al. (2005) conducted a longitudinal study, using alumni of MBA and Specialised Master's programmes to compare the outcomes of the generalist MBA with those of specialised graduate programmes. Findings suggested that both MBA and Specialist Master's programmes were similar in terms of performance, self-efficacy, income, and career success.

"Management…is open to everyone… Indeed, managers do not necessarily need to have studied at all. They can be gifted amateurs!" is a view stated by Schlegelmilch and Thomas (2011, p. 476). Rubin and Dierdorff (2013) disagree, opining that "it is time to move beyond the idea of "an MBA for everyone" and toward a more nuanced exploration of career context" (p. 136). This statement alludes to the links between MBA and students' vocational situation. Interestingly, the authors indirectly suggest that MBA education might be of more benefit to some people than to others. This constitutes support for the argument made in the current research. Rubin and Dierdorff (2013) aptly ask the following questions: "How can we foster more career awareness and enable students to more actively manage their career development?" (p. 136) and "How could curriculum be constructed that truly goes beyond functional knowledge…?" (p. 136)

2.1.3 The Psychological Impact of MBA Programme. Blair et al. (2014) aimed to assess the association between intelligence and leader development behaviour through

participants' post-performance feedback on goal-setting. Archival data of 100 Executive MBA students completing a leader development programme was used. Outcome measures for the study were 'goal quality' as rated by two subject-matter experts (SMEs) and 'goal-feedback correspondence' (the extent to which participants' developmental goals matched their performance feedback), with 'intelligence' (analytical and logical reasoning ability) as the predictor. The hypotheses for the study were as follows:

- Participants' intelligence would be positively related to goal quality; and
- Participants' intelligence would be positively related to the correspondence between feedback and goals.

The hypotheses were assessed using hierarchical linear regression in *post hoc* analysis, after professional discipline was controlled for. Intelligence was found to be positively related to goal-feedback correspondence. After controlling for professional discipline, the intelligence-goal quality relationship became significant. Blair et al. (2014) concluded that members of different professions respond differently to leader development interventions, noting that the mean goal quality and goal-feedback correspondence scores were lower for Physician MBA students than for Senior-Executive MBA or Aeronautical Engineer MBA students. Furthermore, the goal quality measure revealed these differences as significant. Interestingly, Prince et al. (2014) close their article with a burning question that echoes the sentiment of Blair et al. (2014), and which is the crux of the present writer's argument that MBA education by design benefits some students more than others: "Does an MBA education, for instance, uniquely affect students with different backgrounds (i.e., educationally, extent of business experience, or culturally)?" (p. 308).

Prince et al. (2014) state that "the conflicting assessments of the value of an MBA education suggest that the value of this degree may be affected by factors other than the degree itself" (p. 301). Stretching this line of thought, the authors explored the manner in which part-time MBA students' relationship with their employers fluctuated as they proceeded with the programme. They thereby assessed the extent of integration (i.e., organisational socialisation) of these individuals within their employer organisations. On a sample of 310 MBA students from a public East Coast university and a private Midwest university, findings suggested that beyond business knowledge and skills acquisition, students' progress on the MBA programme was significantly related to the 'co-worker support' integration factor and future prospects with the same employer. Otherwise stated, these students became more integrated with their

organisations as they moved through their studies, with this trend having positive implications for the employer organisation.

Brown et al. (2016) examined transfer (a measure to evaluate behavioural training) from an interpersonal skills-focused management development programme, based on behavioural goal-setting interventions, for public sector personnel who had recently been nominated as new supervisors/managers. Transfer was assessed via a self-report survey using Self-BOS (Behavioural Observation Scale) ratings and workplace observer BOS ratings. Hooijber and Lane (2009, as cited in Brown et al., 2016) acknowledge that the apex goal of management education is "inducing behaviour change in participants" (p. 483). Findings indicated that the training programme was effective; a comparison of pre- and post-test scores revealed higher self-efficacy and transfer (self-BOS ratings) post-programme. Behavioural outcome goals were responsible for increasing transfer whilst behavioural specific goals undermined transfer. Results did not support the superiority of any behavioural goals to the do-your-best comparison condition. A limitation of the study was the strict focus on behavioural measures and the absence of pre- and post-learning assessment to clarify whether a learning change could have affected the transfer of training.

There seems to be consensus amongst the aforementioned authors (Blair et al., 2014; Brown et al., 2016; Prince et al., 2014) that management education should catalyse behaviour change and that management development interventions affect individuals differently. As such, the researcher (present writer) anticipates vocational behaviour change amongst the MBA group post exposure to the MBA core courses, and intends to test the suspicion that the MBA group is likely to present with variant vocational behaviour profiles, based on the notion that MBA programmes are designed in ways that benefit some students (those whose vocational personality types are receptive to the influence of the training content) more than others, and thereby affect recipients of the education differently.

Using regression analysis, Gupta and Bennett (2014) aimed to examine the value of the MBA degree to organisations. Specifically, the authors explored the impact of the MBA educational experience on four types of human capital (social-, administrative-, ingenious-, and logical capital) which were hypothesised to predict organisational success (measured by the indicators of productivity and prosperity). Findings suggested that MBA graduates derive value (knowledge and skills) from their educational experience and the organisations they join also benefit. However, specifically regarding the psychological impact of MBA programmes,

qualitative MBA courses were significantly related to ingenious, logical, and social capital, whilst quantitative courses were related to administrative and ingenious skills. The sources of capital which are predicted by the MBA experience are the following: social capital (networking skills, friendship circle, and gaining trust of peers); administrative capital (information integration, business judgement and interpersonal and leadership skills); ingenious capital (ability to handle ambiguity, innovativeness and work habit); and logical capital (computer skills, integrative thinking and ability to model problems). An account of local literature is presented below. The themes covered include: technological interventions that enhance management education for working executives and full-time students (Marais, 1979; Miller, 1982); equipping management education graduates to proactively master the management landscape in South African private and public organisations (Harari & Beaty, 1986); the importance of applied statistics modules in management education for enhanced decision-making amongst qualified managers (Wegner et al., 1994); the link between managers' job performance, their professional attributes and personal characteristics (Friis & Smit, 2004); scientific categorisation of prospective MBA students according to their potential performance on the programme and potential to graduate in record time (Bischoff, 2005); and the value of a holistic approach in the service delivery of MBA programmes (Icli & Anil, 2014).

Harari and Beaty's (1986) interest lie in the overall preparation of prospective managers to lead change and manage resources within the South African context. These authors maintain that a South African manager has a wider scope of practice which includes mastery of traditional management skills paired with accurate decision-making within a volatile political and socio-economic environment. Similar to Harari and Beaty (1986), Wegner et al. (1994) view accurate decision-making (an outcome of applied statistics) as a salient feature of practicing managers.

Bisschoff (2005) sought to put forward a preliminary model geared towards predicting academic success of prospective MBA students. The theme underpinning Bisschoff's (2005) article is selecting the right students who will obtain their MBA degrees and likely be 'fit for purpose' managers. The study categorises prospective MBA candidates and their potential performance on the MBA programme using Discriminant Analysis. The discriminant function was reliable and correctly categorized the MBA applicants into their respective groups.

A theme in the forgoing literature is the use of a statistical method (i.e., Discriminant Function Analysis) to categorise post-graduate management students. This complements

Wegner et al. (1994) who proposed the use of applied statistics (embedded in MBA curriculum) to help fortify MBA graduates' decision-making. Therefore, it may be deduced that statistical methods are equally as relevant in the description of post-graduate management students, as they are in the toolkit of practicing managers. Accordingly, the current study used Discriminant Function Analysis to categorise post-graduate management students into Enterprising and Social personality types according to Holland's Typology.

Friis and Smit (2004) focused on the performance of fund managers. The authors indicated that managers' job performance is associated with their professional attributes (specialised knowledge) and personal characteristics (risk-taking appetite). Data collection and analysis underpins the professional behaviour of these specialists. Friis and Smit (2004) echo the value of research (data collection and analysis) that is flagged by Wegner et al. (1994) as 'statistics for managers' decision-making'.

Miller (1982) asserts that MBA applicants at the UCT GSB are subjected to a gruelling selection process, which includes the General Management Admissions Test (GMAT) and a prolonged interview amongst other things. As such the chosen student body is "intelligent, mature and strongly self-motivated" (Miller, 1982, p. 123). Bisschoff's (2005) quantitative approach (Discriminant Analysis) for the categorisation of prospective MBA students on the basis of their academic ability and potential to complete the degree in record time, seems more lenient than Miller's (1982) description of the selected MBA student body. Bisschoff's (2005) model accommodates a wider scope (high and average performers) of prospective students and is not restricted to the selection of the crème of the MBA applicant crop. This may be in recognition that managers who graduate with an MBA need not necessarily be the top performers in their group to be effective and successful in the workplace.

The UCT GSB learning model and associated instructional techniques follow. The learning model segments "knowledge" as: facts (ideas and definitions), skills (procedures and the application), established concepts (hypotheses, theories and relatively well-accepted assertions), and frontier concepts (information that is debatable and unresolved including new research terrain that is ripe for testing). The four stages of learning are as follows: knowledge acquisition; embedding of knowledge; knowledge integration and knowledge testing (Miller, 1982). The author asserts that a typical MBA student, at the time the article was published, would not be easily discouraged by their academic workload and the challenge of CAI. Contrarily, their resilience produced 'enthusiasm' for CAI (Miller, 1982).

Miller (1982) suggests some policy guidelines towards the optimal use of CAI, indicating that the guidelines listed are UCT GSB-specific. Accordingly, CAI must complement ("be adjunct to") existing teaching processes; CAI should gradually build the students' learning capacity in sync with the cognitive demands of the MBA course content; additionally technological barriers should be reduced. The choice of CAI elements should be strategic with respect to their unique benefits; CAI should accentuate traditional learning methods. Finally, CAI activity should imitate the computer-based business environment. To conclude, Miller (1982) captured the essence and value of CAI as follows: students' comprehension of difficult time-dependent business relationships, their experimentation with computerized simulation models and their quick exploration of events spanning years.

2.2 Management and Governance

The difference between Management and Governance is indicated by the following simple definitions provided by Francesco Appio (2013): "'Management' is the allocation of resources and overseeing the day-to-day operations of the organisation", whilst "'Governance' is the strategic task of setting the organisation's goals, direction, limitations and accountability frameworks". The two phases of the current study involve managers from the private and public sectors in South Africa, who are involved in post-graduate management education programmes. The literature that follows serves to highlight the behaviour of the private and public sector managers.

2.2.1 Research on Managers' Behaviour. Studies of managers' behaviour in the private and public sectors have included the following foci: conditions for innovation in public sector organisations, where emphasis is put on managerial behaviour that catalyses innovation (Demircioglu & Audretsch, 2017), and value creation as the priority of management practice, where authors have investigated the co-ordination of public-private partnerships and the outcome of social value creation (Caldwell et al., 2017). Meynhardt et al. (2017) argue that public value creation and performance are contingent on public managers embracing a spirit of entrepreneurship and the involvement of the end-users (society) in the value created. The authors maintain that public managers can gain the favour of society by engaging in dialogue and participative management aimed at unearthing public value systems (i.e., public value management) that are shared and approved by all. Glińska-Neweś and Szostek (2018) studied leadership behaviours as antecedents of Organisational Citizenship Behaviour (OCB), emphasizing that a transformational leadership style and effective communication produce

OCB. They concluded that private sector managers must promote prosocial behaviour within their organisations; public sector managers should bolster organisational commitment amongst their staff in general.

Verweij et al. (2017) investigated managers' responses to events (e.g., the implementation phase of infrastructure projects) and the ways in which the responses produce satisfactory/unfavourable results. They opine that managers' behaviour should include pumping enough resources (personnel, time and money) into the implementation-phase of public-private projects. Moreover, collaboration of public and private managers produced favourable outcomes. Gabler et al. (2017) studied disaster resilience of managers in public-private short-term collaborative partnerships. They argue that teamwork (despite differences in goals and roles) should define the working relationship. Managements' behaviour should be consolidated in the form of a performance checklist, to track the successes and shortfalls of their short-term collaborations in response to various crises.

Torfing et al.'s (2019) research theme was 'transformation of the public sector into an arena for co-creation'. These authors encourage researchers to study how public leaders come to coalesce public and private actors with divergent ideas and experiences to independently engage in co-creation. They also argue that public professionals should drop the façade of indifference they present to the society they serve, take societal feedback seriously and invite participative management. Qazi et al. (2017) found a significant difference between managers and ordinary workers regarding the 'experimentation' dimension of organisational culture i.e., managers' level of experimentation was significantly lower, and non-managers enjoyed significantly higher levels of job satisfaction than managers.

Farrukh et al. (2017) investigated the role of organisational commitment in the display of employees' intrapreneurial behaviour. Their target sample was workers in Pakistani higher educational institutes (HEIs). The authors acknowledge that organisations strive to gain market share (compete and thrive). Moreover, they argue that behavioural and psychological elements may drive employees' intrapreneurial activity. Results of the study revealed that organisational commitment had a significant effect on employees' intrapreneurial behaviour. Moreover, affective commitment was positively related to intrapreneurial behaviour, suggesting that workers who are emotionally connected to their work environments (objectives and goals) are likely to be innovative and entertain risk to solve organisational problems. Farrukh et al. (2017) cite Thompson and Heron (2006), who suggest that affectively committed workers creatively

collaborate (knowledge sharing) with their counterparts, thereby enhancing the possibility for intrapreneurial behaviour. Normative commitment, which denotes employees' attachment to their organisation based on obligations communicated by the organisation (e.g., norms, values, strategies, policies, procedures and practices), was found to be positively associated with intrapreneurial behaviour. Normatively committed workers would be aware of the performance management systems within their organisations and thus be likely to perform to the best of their ability (Farrukh et al., 2017). In this regard, the authors argue that organisations must catalyse and preserve normative and affective commitment of their employees. This seems to be a recommendation targeted at managers/organisational leaders who must communicate the organisational culture and foster an organisational climate that is conducive to intrapreneurial behaviour. The limitations of this study included: i) a focus on the direct link between the selected variables (e.g., organisational commitment and intrapreneurial behaviour), without controlling extraneous variables (e.g., gender and personality traits); and ii) a focus on HEIs, which differ significantly from traditional business organisations.

Whilst research by Farrukh et al. (2017) magnified the importance of intrapreneurial behaviour, in a similar vein Demircioglu and Audretsch (2017) focused on differential creativity/innovation within the public sector. These authors investigated the reasons behind varied innovative activity across public sector organisations. Using 2012 Australian Public Service Commission data (n=21,093), the authors established that innovative behaviour/activity in public organisations was contingent on factors which were specific to the public organisations under investigation. Innovative activity was catalysed by intrinsic factors on the part of regular employees, such as experimentation and the desire to maximise performance. Managerial behaviour, which also spurred innovation, was operationalised by 'responding to poor performers (who do not innovate)' and the 'presence of constructive feedback loops'. It was found that public sector managers had a statistically significant impact on innovation, albeit with a small effect size; employee-linked conditions revealed a higher effect on innovation. These researchers indicate that regarding the Australian Public Service Commission (APSC) data, innovation was measured at the workgroup level (i.e., middle managers and a combination of differently ranked frontline employees). The study's main finding was the systematic differences in the tendency to innovate across public sector organisations. Management and organisational strategies were found to impact innovative activity/behaviour. Creativity and change are flagged by Pierce and Delbecq (1997, as cited in Demircioglu & Audretsch, 2017) as components of innovative behaviour. Although it has been

recognised that human capital is bolstered through training initiatives, an organisation's setting, size and performance contribute to its innovative 'muscle'. Deregulation, the prioritisation of openness and provision of room for creativity and adaptation all incentivise public sector employees to undertake innovative behaviour (e.g., in-service delivery). Budget allocations were suggested to be positively (heightened monetary resources can boost innovative activities) and negatively (reduced monetary resources encourage creative problem solving) related to innovation; however, these relationships were not statistically significant. Demircioglu and Audretsch's (2017) findings are in keeping with Self-determination Theory (SDT), which prioritises the intrinsic factors of work and recognises the autonomy of individuals, thus emphasising that a person's behaviour should be self-motivated and self-determined. Autonomous employees who are at liberty to experiment are likely to innovate.

Meynhardt et al. (2017) ask: "…what does it mean to create value in the public sector?" (p. 135). According to these authors, the discourse of public value in public administration literature highlights peoples' interest in the role of state institutions within their society. Public value thinking suggests that public managers should embrace entrepreneurial approaches to their practices. Models of efficiency that are located within the private sector should be identified by public managers and transferred to the public sector. These authors equate public value with "effectiveness", arguing that public servants are legally obligated to serve society, for the good of all. Essentially, this obligation justifies the existence of public administration. Entrepreneurship is flagged as a challenge facing the public sector. To create value in the public sector, public managers must embrace a spirit of entrepreneurship that resonates psychologically with the members of society who are the end-users of the value created (Meynhardt et al., 2017). A nod from society gives credence to the work of public administrators and managers. Introspection is highlighted as a behaviour that public managers should adopt so as to ascertain the effectiveness of their value creation. Perhaps a question a public manager should ask themselves is, "Are my decisions impactful, and valued by the society I serve?". Participative management is another way in which public managers can gain the favour of members of society. The authors suggest that public managers and society should engage in a dialogue to unearth a system of public values which are shared by everyone. Schuppert (2010) coined the phrase "public value management" (as cited in Meynhardt et al., 2017, p. 155) to describe this iterative process. The authors (Meynhardt et al., 2017) conclude that the Public Value Atlas can be employed by public managers as a tool for introspection regarding the value they bring to society. The Public Value Scorecard is another decision-

making measure that can be used to assess the pros and cons of "public value contribution goals" (Meynhardt et al., 2017, p. 155). Through this instrument managerial behaviour is assessed against the needs of society.

Caldwell et al. (2017) continue the theme of value creation as it relates to managers. These authors highlight value creation as the priority of and impetus for management practice and studies. Value creation stemming from hybrid organisational forms (public-private collaborations) represents the joint effort of both entities. In this regard, organisational resources from both ends are gathered to develop new pools of value. Caldwell et al. (2017) suggest that the creation of social value in hybrid organisations is challenging owing to failing alliances. Hybrid collaborations face difficulties such as dissimilar foundations of knowledge, divergent incentives, and separate goals and value systems. These differences culminate in heightened governance costs with respect to "contracting, coordinating and enforcing" (Rangan et al., 2006 as cited in Caldwell et al., 2017, p. 907). Contractual and relational approaches are advanced by literature to remedy/neutralise the potential for underperformance by both public and private parties (Roehrich & Lewis, 2014, as cited in Caldwell et al., 2017). Caldwell et al. (2017) acknowledge that social value creation (which is community/society-centric) and economic value creation (which is the private entity's priority) tend to be in competition. Their research question investigates the way in which public-private collaborations are coordinated to produce social value. Relational coordination denotes "the management of task interdependencies in the context of relationships" (Gittell, 2001, as cited in Caldwell et al., 2017). The study revealed that relational coordination had an impact on task performance and social value creation. An absence of relational coordination produced sub-standard task performance and social value creation. However, mutual knowledge and goal alignment were prerequisite factors for relational coordination to work. Organisational and ecosystem experience were observed to impact social value creation. Moreover, Caldwell et al. (2017) argue that a climate of professional embeddedness positively moderates the effect of relational coordination on task performance in public-private collaborations. In particular, the higher professional embeddedness is, the more relational coordination improves task performance. These authors concluded with the following proposition: "Organizational and ecosystem experience positively moderates the relationship between task performance and social value creation in public-private collaborations. Specifically, task performance improves the likelihood of social value creation when organizational experience and ecosystem experience are high." (Caldwell et al., 2017, pp. 922 - 923).

2.2.2 New Public Management. Torfing et al. (2019) focus on co-creation and its relevance for public sector managers, public and private organisations, as well as society at large. The authors assert that New Public Management has changed public administration culture to embrace a spirit of managerial entrepreneurship, uplift and empower citizens and advance an outcome-focused approach regarding the delivery of public services. They claim that New Public Management's interest in transferring managerial principles and tools, e.g., the prioritisation of efficiency, from the private sector to the public sector for improved service delivery has failed to adequately address the problems inherent in 'Classical Public Bureaucracy' (Torfing et al., 2019). The authors opine that modern societal demands require collaborative problem solving from the public and private entities. In this regard, policy making and public service delivery stand to benefit from co-creation.

Co-creation is outlined as a New Public Administration paradigm (Torfing et al., 2019). This paradigm frames policy development and service delivery in a novel way. It favours the participation of multiple actors (citizens and private stakeholders), the demise of monopolies in the public service and the replacement of public-private competition. Co-creation stems from the private sector where customer satisfaction has been prioritised and customers have been encouraged to participate in the creation of the services/products they want. Here, end-user-feedback has been the criterion for private organisations for effective service delivery and gains in market share (Torfing et al., 2019). The authors assert that co-creation can thrive in the public sector, since service delivery, supply (production) and demand (consumption) as well as the centricity of service recipients (end-users) are features of this sector too. Co-creation aims to produce fresh and creative solutions that outdo existing practices.

New public leadership and management forms are required to gain the most from co-creation. Torfing et al. (2019) maintain that research is needed to ascertain the way in which public leaders are able to coalesce public and private actors with divergent ideas and experiences to voluntarily engage in co-creation. However, these authors acknowledge that novel public leadership and institutional designs alone are insufficient to embed co-creation as a main trajectory for public sector development. Fresh institutional designs are required to replace competition and control, which undermine co-creation. Furthermore, private and public actors must merge, politicians and stakeholders in the public and private sectors should collaborate, and organisations in both sectors should engage with each other, so as to advance co-creation (Torfing et al., 2019).

2.2.3 Leadership and Management: **Leadership Theories Supporting Co-Creation.** The notion of co-creation is one that is inherent in forms of leadership. For instance:

- Deliberate political leadership suggests ways in which public and private stakeholders can enjoy a mutually beneficial collaboration with politicians (Lees-Marchment, 2016, as cited in Torfing et al., 2019).
- Administrative leadership theory – the theory of relational coordination – recognises that public managers are challenged by the reality of leading complicated and cross-cutting processes of co-creation involving personnel from external departments over which they have no authority. Here, managers must contextualise their behaviour (activities) against the backdrop of a broader collective task, which involves other stakeholders (Gittel, 2005, as cited in Torfing et al., 2019).
- Theory of disrupted leadership (Pearce & Conger, 2003, as cited in Torfing et al., 2019) relates to public sector employees who are driven to assume leadership roles in cross-cutting projects and collaborative governance platforms. Leadership opportunities can be extended to low-ranking workers, citizens and private stakeholders who co-create novel systems in the public sector.
- Horizontal leadership (Denis et al., 2012, as cited in Torfing et al., 2019) is employed where workers who assume the role of 'project leaders' are tasked with leading a group of their 'peers' who share the same hierarchical level of employment. Here, the astute leader will respect the range of competencies, knowledge and perspectives of the team.

Glińska-Neweś and Szostek (2018) investigated organisational citizenship behaviour (OCB) in the public and private sectors. Organisational citizenship behaviour denotes the behaviour of employees who extend themselves beyond their formal work roles in an effort to enhance organisational effectiveness and the well-being of their co-workers. In this regard, OCB can be summarised as 'extra-role behaviour that is pro-social'. Glińska-Neweś and Szostek (2018) mention leadership behaviours, task variables and employees' job attitudes as antecedents of OCB. They suggest that OCB is often associated with private sector organisations, whilst public sector organisations are associated with 'counter-productive work behaviours' (CWB), also known as 'organisational deviance' (workplace behaviour aimed at destabilising the organisation). The occurrence of CWBs in the public sector are attributed, inter alia, to low salaries, centralised management and restricted mobility for workers, all of which may frustrate employees. Specifically, these authors sought to identify differences in the scale and frequency of OCB as a function of organisational type (e.g., public or private). 280

employees from the private sector and 244 employees from the public sector (local government units) comprised the sample for the study. Findings revealed that public sector workers engage in OCB more than those in the private sector. Furthermore, public sector employees' OCB is people-centred whilst that of private sector employees targets the organisation. Managers who display transformational leadership characteristics and develop unique relationships with their subordinates by applying effective communication strategies (Leader-Member Exchange Theory) are likely to engage in OCB. Glińska-Neweś and Szostek (2018) conclude their article by advising that private sector managers should encourage pro-social behaviour within their organisations with a view to bolstering social support amongst co-workers. On the other hand, public sector managers are encouraged to boost organisational commitment amongst their subordinates and general staff.

Whilst OCB was the focus of the aforementioned researchers, Qazi et al. (2017) were interested in job satisfaction and organisational culture as organisational occurrences. They researched the extent of job satisfaction and organisational culture within an organised retail sector. Using a sample of 436 workers from various retail organisations, the researchers obtained the following findings: job satisfaction and organisational culture were positively and significantly related. Both managers and ordinary workers had moderate levels of organisational culture experience. There was a significant difference between managers and ordinary workers regarding the 'experimentation' dimension of organisational culture, i.e., managers' levels of experimentation were significantly lower than that of ordinary workers. Workers with high levels of work experience had significantly higher levels of the following dimensions of organisational culture: Openness and Risk taking, Trust, Confrontation, and Pro-action. Furthermore, no significant differences in job satisfaction were found between highly versus less experienced employees; both groups of employees enjoyed moderate levels of job satisfaction. However, non-managers enjoyed significantly higher levels of job satisfaction than managers (Qazi et al., 2017).

In the context of public-private partnerships, Verweij et al. (2017) investigated the manner in which management's responses to events produce either satisfactory or unsatisfactory results. The authors used case studies to assess management responses in relation to two infrastructure projects. The implementation phases of the infrastructure projects were under scrutiny. Specifically, the authors sought to establish the management responses to 'implementation-phase-events' that lead to outcomes which were satisfactory/unsatisfactory. Findings revealed that management responses that were externally focused (e.g., cooperation

between private and public partners) resulted in satisfactory outcomes. The authors suggest that in reality management responses are usually self-serving (i.e., non-cooperative), producing unsatisfactory results (Verweij et al., 2017). Local stakeholders should be included as partners in public-private partnership projects to neutralise any potential for bias and to promote the importance of value creation for all, i.e., the society that stands to benefit from the implementation of the public-private partnership projects as well as the aforementioned managers and stakeholders (municipalities). Managers should respond to events during the implementation phase of these projects with sufficient resources (e.g., personnel, time and money) and an 'external orientation' (i.e., cooperation between public and private partners). Moreover, stakeholders and project management stand to benefit from the aforementioned resources.

Both Verweij et al. (2017) and Gabler et al. (2017) were interested in managers' collaborative behaviour as it relates to the prevention of negative outcomes, i.e., allocating sufficient resources for timeous and optimal project completion, and demonstrating disaster resilience within the context of brief partnerships. Gabler et al. (2017) studied disaster resilience in relation to public-private short-term collaborations. The authors focused on supply chain disruptions and acknowledged that supply chain managers face the challenge of enhancing their capacity (competency development) to handle long-term disruptions caused by natural and man-made disasters. Disrupted supply chains can be remedied by partnerships between public and private entities. Gabler et al. (2017) use supply chain governance logic (as it relates to the management of resources and competing values) to introduce a framework that outlines short-term collaboration between public and private entities and the manner in which these partnerships affect supply chain resilience. The authors' model – the emerging theoretical framework – aims to foster 'collective responsiveness' amongst public and private entities with the goal to consolidate the benefits to each entity whilst also providing value to society at large. Furthermore, it focuses on aligning and adjusting divergent organisational values which typify, inter alia, the difference between public and private sectors (Gabler et al., 2017). The study suggests that public-private partners should be prequalified so that the collaboration can be "activated" when disaster strikes. The impact of public sector resources on the resilience of private sector firms' supply chains should be measured. Private sector firms with supply chains that are dependent on public resources are urged to arrange government agencies' assistance in advance to curtail impending disasters. Supply chain managers might need to act swiftly to avert threats to a well-functioning supply chain, yet they may be restricted by having to wait

for government to respond. Government regulations constrain the collaborative actions of public and private sector managers, essentially undermining their resilience when faced with disasters. Managers in public-private partnerships must find common ground irrespective of differences in project completion timeframes, goals and roles. In this regard, Gabler et al. (2017) suggest that the behaviour of these managers should be consolidated in the form of a performance checklist, to track the successes and shortfalls of their short-term collaborations in response to various crises. Performance criteria in the context of disaster recovery and resilience should include, inter alia, strategy, metrics, interdependence, communication and goals. It is suggested that the goal of supply chain management should expand beyond frugality and an organisation's bottom line to encapsulate resilience.

Gabler et al. (2017) state that supply chain governance theory is premised on the idea that firms can collaborate whilst protecting their resources. Within the supply chain, all firms are viewed as 'exchange partners'. The aspect of 'safeguarding' as it relates to each firm's resources exists to preserve the inimitability as well as the strategic and financial value of each firm. Governance Theory promotes the evolution of the supply chain in terms of its direction and shape. Positive governance conditions in this regard are 'structured', 'quantified', 'communicative' and 'aligned', whilst negative governance conditions are termed 'incongruent strategy', 'unidirectional communication' and 'internal focus'. The authors state that a combination of these positive and negative governance conditions produces a fresh logic of 'relationship governance' founded on 'firm integration strategy' (Gabler et al., 2017). Ponomarov and Holcomb's (2009) conceptualisation of 'supply chain resilience' indicates that resilience is the ability to respond to adverse and uncertain market conditions favourably and flexibly. Teamwork, contingency planning, communication and integration are the pillars of disaster supply chain management and logistics, according to Natarajarathinam et al. (2009, as cited in Gabler et al., 2017). Supply chain management and logistics are plagued by the presence of extraneous factors that fall beyond the control of private sector firms or government. Therefore, Gabler et al. (2017) argue that short-term collaboration needs to occur between business, government and the owners of critical infrastructure. However, an amalgamation of these different stakeholders presents as a challenge regarding resilience i.e., responding to crises/disasters with resilience, owing to the different roles and goals of each stakeholder.

2.3 Outcome Variable: Vocational Behaviour Indicators

The vocational behaviour indicators considered in the current study are embedded in literature. It is considered that a comparison between an individual's current or most recent vocational status and their engagement in management education might lead to changes in reported levels of vocational behaviour. Research has indicated that people with high levels of career commitment would be inclined to leave a job if they felt that such action would enhance their career; this would be contingent on the individual's level of confidence about their career choice (Blau, 1988). London (1983, as cited in Ballout, 2009) suggests that external factors such as situational characteristics may partly account for employees' career commitment. This leads to the consideration that job-related conditions (resources and demands) as situational factors could influence an individual's commitment to a career. In the context of the current study, it follows that MBA/MBL core courses could be viewed as situational factors that impacted students' reported vocational behaviour. The following sections provide an account of the chosen indicators of vocational behaviour, viz., career commitment, vocational identity, work identity, career decision-making self-efficacy and vocational interest/personality.

2.3.1 Career Decision-Making Self-Efficacy. Whiston et al. (2017) investigated the effectiveness of career choice interventions. Their study highlighted the value of teaching 'career decision-making methods' as a psycho-educative intervention. These authors obtained a weighted mean effect size of 0.352, which was in line with earlier meta-analyses. In this regard, individuals who received career choice interventions scored above a third of a standard deviation beyond those who did not receive such interventions. Moreover, separate meta-analyses on the following outcome measures were conducted: "vocational identity, career maturity, career decidedness, career decision-making self-efficacy, perceived environmental support, perceived career barriers and outcome expectations" (Whiston et al., 2017, p. 182). Career decision-making self-efficacy was the most studied construct, with the largest effect size being 0.446, albeit deemed insignificant via the test of heterogeneity of effect sizes. A link was observed between 'counsellor support' and large effect sizes. Furthermore, support was found for interventions that required the clarification of values, and psycho-education i.e., educating people on strategies of career decision-making (Whiston et al., 2017).

On the theme of effective career choice behaviour, Storme et al. (2019) examined tolerance for career decision ambiguity as well as difficulties in career decision-making, using a sample of French-speaking university students. Firstly, the authors sought to validate the

CDAT (career decision ambiguity tolerance) scale in French – findings suggested that the scale is psychometrically sound. Subsequently they tested a model of the CDAT (predictor variable) and career decision-making difficulties (outcome variable) relationship. Results of the study supported their hypothesis that career decision-making self-efficacy operates as a mediator of the CDAT-career decision-making difficulties relationship. The outcome of this mediation study replicated that of Xu and Tracey (2015). On the other hand, Storme et al. (2019) found that career decision-making self-efficacy mediated the relationship between career decision ambiguity and career decision-making difficulties.

Jiang (2016) investigated career decision-making self-efficacy as an outcome variable of emotional intelligence. Emotional intelligence predicted career decision-making self-efficacy through the mediating roles of goal commitment and professional commitment. The author found support for this model using a sample of 185 Chinese university students. Moreover, gender was found to moderate the link between emotional intelligence and goal commitment, where women displayed a weaker relationship between emotional intelligence and goal commitment than men. Jiang's (2016) study also highlights the function of emotions in career management and goal setting.

In a study titled "Applying the social cognitive model of career self-management to career exploration and decision-making", Lent et al. (2016) created a new measure of career exploration and decision-making self-efficacy. Decisional self-efficacy and coping efficacy were the factors produced by the measure. The 'decisional self-efficacy' factor was found to relate strongly to a reputable measure of career decision self-efficacy. Lent et al. (2016) suggest that career decisions made by the layman are made in a simple fashion that is in sharp contrast with methods used by career theorists (subject-matter experts). These authors maintain that lay people retain or reject career options on the basis of self-perceived 'fit' or 'matching' of the roles.

The effects of an undergraduate career class on men's and women's career decision-making self-efficacy and vocational identity were assessed by Scott and Ciani (2008). Their study's proposition was that students' involvement in a career exploration course would contribute to or improve their career decision-making self-efficacy.

2.3.2 Vocational Identity. Using a sample of Australian adolescents and parents, Rogers et al. (2018) examined the sample's perceptions of vocational identity and adolescent career development tasks (career planning, exploration, certainty, and world-of-work

knowledge). Findings suggested that the groups' perceptions were not entirely congruent, although moderate correlations were found between the perceptions of the two groups. For adolescents 48% of the variance in vocational identity was explained by career development tasks (excluding career exploration), whilst for parents 38% of the variance in vocational identity was explained by career development tasks (excluding world-of-work knowledge).

With a focus on 'the post-school transition process', Steiner et al. (2019) conducted a time-lagged study with three waves across three years, using a sample of 819 Swiss adolescents. The authors categorised a 'protean career orientation' as a subjective transition outcome, and adolescents' 'pursuit of high school or vocational education and training' as an objective transition outcome. The following findings were indicated: strong vocational identity clarity was predicted by occupational self-efficacy beliefs; reduced vocational identity clarity was predicted by perceived career barriers; a higher chance of vocational education and training enrolment (as opposed to high school enrolment) was predicted by vocational identity clarity. Lastly, the researchers did not expect a negative relationship between vocational identity clarity and protean career orientation.

In a longitudinal study, Cheung et al. (2019) assessed the effect of work internships on the career development of university students in Hong Kong. Participants were second- and third-year students who did overseas internships for a one to two-month duration. Findings suggested that significant increases in students' career development behaviour (career exploration, career decidedness, vocational identity and self-perceived employability) were catalysed by internship participation. Self-perceived employability amongst students majoring in Science and Engineering was significantly higher than that of Social Science students.

In a study focused on acculturation and career development, Hou et al. (2018) compared 54 domestic and 53 international students. Results indicated that a significant difference in mainstream acculturation was found between the groups. However, this difference was absent regarding vocational identity, dysfunctional career thoughts (DCT), goal instability and the heritage domain of acculturation. Moreover, for international students DCT was the sole significant predictor of vocational identity; whilst for domestic students DCT and acculturation accounted for 71% of variance in vocational identity. The authors maintain that the improvement of vocational identity is contingent on career practitioners assisting individuals to challenge their dysfunctional career thoughts. For international students DCT solely and

significantly predicted vocational identity; for domestic students DCT and acculturation accounted for 71% of variance in vocational identity.

Given the perceived gap in research concerning trauma and career development, Zeligman et al. (2020) investigated the relationship between vocational identity, developmental work personality and trauma symptoms. Findings revealed that individuals who had experienced high trauma levels presented with low scores on vocational identity and developmental work personality.

2.3.3 Work Identity. McKevitt et al. (2017) explored work identity and career satisfaction as they relate to project management. The authors acknowledge that within modern career theories, individuals are 'architects' of their own employability and career satisfaction. The project management role within organisations must still be developed. The authors hypothesised a moderating effect of 'work orientation' (the manner in which project managers relate to their role, e.g., as a career, calling or job) in the relationship between project management identity and career satisfaction. Results revealed that project managers who strongly identify with their profession are validated by project networks, which reside outside of organisations, thereby lessening these managers' dependence on internal organisational support. However, not all project managers viewed their role as a career. On the idea of 'job orientation', a "calling" seems to encompass high levels of job satisfaction and identity, a "career" seems to encompass moderate levels of job satisfaction and identity, whilst a "job" seems to encompass low levels of job satisfaction and identity (McKevitt et al., 2017).

From the aforementioned studies the current researcher (Tabane) surmised that information gathering and self-exploration were necessary activities for the development and strengthening of an individual's sense of vocational identity. Furthermore, it was considered that the organisational group learning projects that form part of the MBA/MBL curriculum/core courses may influence the indicators of vocational behaviour. According to Robbins et al. (2009), organisational structure is a feature in the development of employees' work identity, and it is noted that job and work roles can influence employees' work identity in a positive or negative way. Sveningsson and Alvesson (2003, as cited in Saayman & Crafford, 2011) caution that job frustration can cause a weakened work identity despite an employee's ability to perform job tasks and work roles adequately. Similarly, work identity will be promoted if individuals identify with their work roles, can negotiate their work roles and their job expectations are met (Saayman & Crafford, 2011).

2.3.4 Career Commitment. Campbell and Hahl (2020) suggest that overqualified men tend to be viewed as less committed to the firms at which they are employed, whilst women who are overqualified for their organisational roles are perceived by their organisation as displaying high levels of career commitment. Overqualification for a job is interpreted by hiring managers as potential organisational disloyalty/reduced commitment, given that overqualified individuals are typically viewed as having more employment opportunities beyond those for which they have applied, and therefore are likely to exit the organisation on a whim. The gender bias regarding perceptions of overqualification suggests that women are likely to commit to their firms as a function of their 'communal values', whilst men will move as a function of their stereotypically agentic behaviour. Therefore, Campbell and Hahl (2020) argue that overqualified women will escape the penalty of not being hired, whereas overqualified men (rather than reasonably qualified men) will not. Moreover, overqualified women would be the preferred candidates for hiring (receiving job offers), over their 'sufficiently qualified' female counterparts. The authors concluded that career commitment is a key factor tied to womens' vocational behaviour (employability).

Using a sample of 474 employees from 30 IT enterprises in China's Pearl River Delta region, Huang et al. (2019) assessed the impact of person-job fit on innovation behaviour. Career commitment was found to moderate the person-job fit and job involvement relationship, as well as the person-job fit and innovation behaviour relationship. Specifically, career commitment increased the positive effect of person-job fit on job involvement and innovation behaviour.

2.3.5 Vocational Interest/Personality. Holland's (1979) Self-Directed Search (SDS) has been used to produce RIASEC Types. However, in the current study, located in the South African context, the researcher chose to use the South African Career Interest Inventory (SACII), developed by Morgan et al. (2014) to produce RIASEC Types amongst the target groups of the study. Morgan et al. (2014) developed and conducted initial validation of the SACII. Using a sample of 985 university students in the first study and 175 university students and adults in the second, the authors assessed the structural validity of Holland's circular/hexagonal model within the South African context. The fit of a tight circular ordering and four circumplex models were investigated through the randomisation test of hypothesised order relations and covariance structure modelling. In both studies, good fit for the tight circular ordering was supported by the randomisation test. However, in Study 1 unsatisfactory fit across the four circumplex models was demonstrated by covariance structure modelling, although

satisfactory fit was obtained in Study 2. Results indicated sound structural validity of Holland's circular ordering model in the South African context; that is, Holland's six vocational personality types can be measured with high reliability. Possible reasons for the better fit obtained in Study 2 include the following:

- A refined set of items were selected to reproduce a hexagon and were subsequently employed in Study 2.
- The vocational interests of working adults (which would likely have greater stability and definition than those of the university students assessed in the first study) were included. Adults were expected to have greater self-insight regarding their interests and a clear idea of their preferred job activities. As such more reliable and valid responses to the items were expected.
- Given that the sample was largely populated by White participants and that previous research had indicated that Holland's model generally fitted better in Western contexts (Rounds & Tracey, 1996), the authors could not discount the sample's composition as a factor which influenced the fit obtained in Study 2.

Morgan et al. (2014) concluded that further research is needed to make the SACII a viable instrument for vocational interest measurement in South Africa.

Donald E Super's contribution to the science of vocational psychology and the practice of counselling psychology stemmed from the developmental stance he adopted on occupational choice and work adjustment (Savickas, 2001). Savickas (2001) maintains that Super developed vital hypotheses about career maturity, stages, themes, patterns and salience. Additionally, Super developed models and measures of the vocational variables. Savickas (2001) outlines the value of the career constructs that contributed to the foundation of career counselling. Super asserted and preferred a long-term perspective on career development and associated career satisfaction, suggesting that a limited focus on how people choose jobs for themselves eclipsed their ability to improve their vocational coping skills and approximate career opportunities that satisfy their needs. Super's "life-span, life-space" model explained and operationalised coping behaviours and developmental activities that produce occupational choice and work adjustment (Savickas, 2001). To Super, a career served as a representation of personality and human development. Super favoured a developmental and longitudinal careers perspective. "The psychology of occupations concentrates on fitting individuals into jobs whereas the psychology of careers concentrates on fitting work into individuals' lives" (Savickas, 2001, p. 50). The

"which?" and "why?" concerning career choice was the cornerstone of Super's perspective. He maintained that individuals should consider content ("which occupations interest you?") and process ("why does that occupation interest you?") when thinking about their vocational prospects. According to Savickas (2001) Super (1955) defined career maturity as the readiness to make a choice. Career salience denotes a comparison between the importance of a work role against the backdrop of other life roles. Adolescents whose work role is less important than their life structure would be categorised as lacking the career maturity required to make realistic employment choices. People with low career salience could improve their situation by engaging in education and activities that amplify the importance of work in their lives (Savickas, 2001). Career maturity involves the task of "looking ahead and looking around" for prospective and compatible career opportunities; it also involves "planfulness", i.e., an individual's awareness of impending vocational and educational decisions and a willingness to make the choices (Savickas, 2001). Informally competent adolescents may have work, occupational and career knowledge, whilst those with well-developed competence in occupational information would be considered as able to apply occupational information to themselves and start to crystalise their preferences to occupations. The first developmental activity in the Exploration career stage is crystalising a preference. Individuals are said to specify a choice when they match themselves to compatible occupations. Maturity enables individuals to meaningfully discuss their choices; as such aptitude testing and interest measurement become more meaningful to mature individuals because they have had exposure to the world of work and vocational decision-making (Savickas, 2001). Super's Exploration Stage ends with choice implementation by obtaining a position in one's preferred occupation. The Growth Stage in which children and adolescents are taught adaptive work behaviour and attitudes, precedes the Exploration stage. The Establishment Stage (20-year period) follows the Exploration Stage; in the 20-year period, individuals settle in their chosen career and improve in a congruent occupational role (Savickas, 2001). Super's coping mechanisms associated with the various stages included: adapting to an organisation's culture, good job performance, maintenance of social support at work and productive attitudes and work habits (getting along and getting ahead), and planning and exploration for new opportunities.

Patterns and themes represented additional career constructs advanced by Super (Savickas, 2001). Super's four career patterns were the following: stable, conventional, unstable and multiple trial. Patterns are differentiated in terms of the number of times an employee iteratively moves through the vocational developmental activities of crystallizing,

specifying, implementing, and stabilizing (Savickas, 2001). Career themes denote people's personal needs and concerns as they relate to their work history. "Super preferred to help clients understand how they could develop interests that implement their self-concepts and choose occupations wherein they could use the job to advance their life project" (Savickas, 2001, p. 55). In Super's view, career counsellors were meant to create interests and not diagnose them. Life stories should be paired with test scores for successful interest measurement and career counselling interventions to occur. Interestingly, Super's career satisfaction construct separated a person's attitude to their current job from their attitude towards career progress. In this regard, he recognised that a person might not enjoy their current job but not become despondent, knowing that better career prospects are ahead. That is, people may view their current job as a steppingstone to an enjoyable and profitable career in the long-term (Savickas, 2001).

2.4 Theoretical Model for the Study

The current study sought to understand the manner in which a general MBA/MBL versus a Specialised Master's programme affects the vocational behaviour of students. Holland's (1985) Typology was employed as a theoretical foundation to make sense of how an MBA/MBL programme affects peoples' vocational behaviour. How does exposure to MBA/MBL/Specialised Master's core courses make one think about one's identity (vocational identity; work identity; vocational personality type) and career (career commitment; career decision-making self-efficacy)? The study focused on Holland's idea of congruence, particularly his fourth assumption. It sought to make a theoretical contribution by testing a different statistical direction between the factors of environment, personality and behaviour.

2.4.1 Holland's Typology. In Chapter 2 of his seminal book, *Making vocational choices: A theory of vocational personalities and work environments*, Holland (1985) describes, inter alia, the six RIASEC types as well as subtypes (personality patterns), outlining their development, formulation and assessment. RIASEC is an acronym that denotes the various vocational personalities, termed Realistic, Investigative, Artistic, Social, Enterprising and Conventional. A type is a theoretical or ideal and represents a model against which to measure a real person. Types are viewed as the outcome of the interaction between personal and cultural forces (parents, peers, biological heredity, culture, social class and the physical environment). People initially learn a preference for certain activities, which later morphs into strong interests, which in turn result in the development of a unique group of competencies. Individuals' interests and competencies produce certain personal dispositions that influence

their behaviour in terms of thinking, perceiving and acting in unique ways. Holland (1985) argues that

> each type has a characteristic repertoire of attitudes and skills for coping with environmental problems and tasks. Different types select and process information in different ways, but all types seek fulfilment by exercising characteristic activities, skills, and talents and by striving to achieve special goals. Consequently, types are often active rather than passive recipients of environmental influence, for they both seek and avoid environments, problems and tasks (p. 3).

According to Holland (1985), people who closely represent a specific RIASEC type are likely to display the personal behaviours and traits of that type. The person-environment link leads to outcomes e.g., vocational choice, vocational stability and achievement, personal competence, educational choice and achievement, susceptibility to influence and social behaviour, which can be predicted and understood based on personality types and environmental models research. The following are the four working assumptions that underpin Holland's theory (Holland, 1985, pp. 2-4):

i. In our culture, most persons can be categorised as one of six types: Realistic, Investigative, Artistic, Social, Enterprising, or Conventional.
ii. There are six model environments: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional.
iii. People search for environments that will let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles.
iv. Behaviour is determined by an interaction between personality and environment.

Holland's (1979) Self-Directed Search (SDS), an interest/personality measurement instrument, has been used to produce the six RIASEC Types.

The current study focused on the fourth assumption of Holland's theory. Accordingly, knowledge of an individual's personality pattern (personality type) and the pattern of the environment (environmental model) in which the person is located, can be used to predict some outcomes of the person-environment association. The following secondary assumptions, which apply to persons and environments, supplement the aforementioned ones; these secondary constructs are meant to "moderate or qualify predictions or explanations that are derived from the main concepts" (Holland, 1985, p. 4):

- Congruence is the degree of fit between an individual's personality type and the environment. Different types require different environments with their unique opportunities and rewards.
- Differentiation is the extent to which an individual or an environment is well defined. An undifferentiated person or environment would be characterised by many types and equal amounts of the six types, respectively.
- Consistency is the extent of consistency or similarity between the personality types or environmental models. Consistent types are those which are adjacent to each other on the hexagon.
- Identity is an estimate of the clarity and stability of a person's or the environment's identity. Personal identity refers to the degree of career goal, interest and talent definition and stability. Identity also pertains to the stability of a working environment. Identity does not relate directly to the typology, unlike the preceding concepts. "Identity, consistency, and differentiation are all concerned with the clarity, definition, or focus of the main concepts – types and environmental models. They probably represent three techniques for assessing the same concept" (Holland, 1985, p. 5).

There are several advantages to Holland's (1985) theory: i) the typology is simple to understand; ii) theoretically, it is clearly defined, its structure is internally consistent, the scope is wide and it includes formalisations for handling personal development and change; iii) it has received wide research support – using samples of male and female adults, college students, adolescents and children; iv) the typology has practical relevance (i.e. for developing vocational-assessment devices, classifying and interpreting personal and environmental data, and conducting vocational counselling).

The theory is not without its limitations. Accordingly, Holland (1985) opines that: i) whilst hypotheses about person-environment fit interactions have been supported, more testing is required; ii) rigorous examination of the formulations about personal development and change is needed; iii) classification of occupational types may differ according to the devices used to measure them; and iv) several key personal and environmental contingencies have yet to be included in the theory, although a measure of progress has been made regarding the inclusion of the role of education, gender, intelligence, social class and others. It is recommended that researchers control for social status in their experiments, seeing that "the distribution of influence and status within a person's social environment makes a difference" (Holland, 1985, p. 120). It is noted that the roles of special advantage/disadvantage,

intelligence, special aptitudes and social status are indirectly included in the typology; thus, these factors must also be accounted for.

According to Holland's (1985) theory, personality patterns can be used to equate experimental and control groups, in the absence of true experiments. The following can be done: comparisons of experimental and control groups that have the same type only, as well as comparisons of these groups with identical or not significantly different type distributions. Moreover, the groups can be compared strictly on the basis of having identical personality patterns, e.g., RSE versus RSE.

2.4.2 Person-Environment Fit (P-E fit) as a Dominant Research Model in Vocational Psychology. The following assumptions are common to all P-E fit (congruence) theories:

- people search for and create environments that enable them to behaviourally display their traits (e.g., creative individuals seek eclectic positions);
- there are consequences attached to the degree of fit between individuals and their work environments (e.g., stress, productivity, satisfaction, turnover, performance), where better fit is associated with matching outcomes; and
- P-E fit is an on-going and reciprocal process through which people are shaped by their environments, whilst shaping them. P-E fit is integral to career intervention, i.e., decision-making, career planning and adjustment (Su et al., 2015).

Spokane et al. (2000) present an account of the evolving definitions and levels of congruence (person–environment fit). Accordingly, congruence represents correspondence between a person's needs and the situation, wishes and rewards, and preferences and gratification. The measurement of congruence involves comparing individuals' scores on an interest inventory with their chosen occupational fields (Spokane et al., 2000). The debate on the calculation of congruence argues that measurement becomes arduous when considering that individual and workplace occupational fields can be arranged in a rank order, circular, hierarchical, hexagonal, or circumplex fashion (Spokane et al., 2000). Generally, congruence denotes a match between personality and college major or occupational choice (Spokane et al., 2000). Alternative definitions for the following terms akin to congruence have been put forward: occupational-, environmental-, skill utilisation-, aspect-based-, within occupation-, and avocational congruence. Spokane et al. (2000) opine that the congruence definitions (particularly occupational and environmental congruence) presented in their article incorporate

the bulk of serious congruence research conducted since Holland's seminal 1959 article, 'A theory of vocational choice', published in the *Journal of Counseling Psychology*. The authors caution that the use of such definitions in research should acknowledge associated threats to validity. Environmental complexity in congruence research might mean that at face-value overall person-environment fit might be incongruent within a workplace, although a deeper look into the occupational environment might reveal congruence (Holland, 1997). It is noted that congruence studies could take a multidimensional form, in which different kinds of congruence would be assessed (Spokane et al., 2000).

Spokane et al. (2000) outline the ethical danger in conducting true experimental studies of congruence with human participants, as incongruence has been associated with reduced wellbeing (e.g., anxiety); secondly, research participants being placed in temporarily incongruent contexts must be informed of research manipulation and potential threats to their wellbeing. The reasoning is that informed incongruence is less harmful than real incongruence. The current research should avoid these ethical concerns because participants would have independently chosen their environment i.e., academic programme, viz., MBA or MMFI/MCom. in Financial Management Sciences or a Specialised Master's programme. It was intended to isolate the influence of the treatment (academic environment) on vocational behaviour by using several groups in the study, each belonging to either the traditional MBA category i.e., MBA core courses or the Specialised Master's category e.g., MMFI/MCom. in Financial Management Sciences, MCom. Marketing Management etc. Both traditional and Specialised Master's groups would be examined in their natural setting, which participants themselves would have chosen.

2.4.2.1 Measuring the Components of Congruence: Person vs. Environment Codes. There are numerous ways of calculating congruence, which range from complex mathematical indices to simpler ones based on differences between an individual's interest score on the single, double or triple scores of Holland's six RIASEC types and the scores of that individual's environment or occupation (Su et al., 2015; Tracey et al., 2012). The complex calculations allocate congruence scores based on the arrangement of the interrelationships between RIASEC scores. Spokane et al. (2000) posit that complex calculations require the accurate measurement of the environment and also assert that the outcomes of a correlational study can be affected by the researcher's choice of congruence index. However, the debate continues regarding the best congruence index to be used. Su et al. (2015) differentiate between perceived fit (an individual's implicit evaluation of fit i.e., whether they feel integrated into

their environments) and objective fit (operationalisation of fit via assessment and comparing individual variables with environmental ones). They argue that the two might be separate components of the fit construct, given that researchers have found low to moderate correlations between these two types of fit (Edwards et al., 2006 as cited in Su et al., 2015). Fit indices represent the degree of congruence between people and environments with a single score. However, the fit index (a composite of individual and environmental data) has been criticised for being conceptually ambiguous, confounding the effects of individual and environmental variables with P-E interaction, and introducing additional error (Su et al., 2015). To counteract these limitations, Edwards (1994, 2002, as cited in Su et al., 2015) suggests the use of polynomial regression and surface response methodology. However, considering the limitations of multicollinearity and a need for large sample sizes for the testing of higher order terms, the author's approach is premised on the idea that person and environment measures are separate constructs and that researchers should assess fit empirically instead of relying on a fit index.

Operationalising Interest Congruence. There are several ways of operationalising interest congruence. Discriminant Function Analysis (DA) "…involves the determination of a linear equation like regression that will predict which group the case belongs to" (Burns & Burns, 2008, p. 590). Therefore, DA is concerned with the prediction of group membership. DA aims to explore differences between groups, based on the attributes of the cases, indicating which attributes contribute the most to group separation. It prioritises a parsimonious approach towards differences in group membership (Burns & Burns, 2008) and strives to reduce the chance of misclassification of cases into their groups/categories. Individuals' scores on the Independent Variables (predictor variables) are employed in the DA function to predict the category to which they belong. DA can be used to test theory by determining if the classification of cases occurs as predicted. Moreover, the efficacy of the function can be assessed using Chi-square tests (statistical significance), to determine if the function accurately separates groups.

A normal distribution of discriminant scores for each group is a favourable outcome of the DA process. The success of the DA technique can be surmised by observing the extent of overlap between the discriminant score distributions. Misclassification would be observed if the degree of overlap is high, suggesting a poorly performing DA function. During DA, the variables are standardised to excise scale differences between them. Following this standardisation process, absolute weights may be used to rank the variables in the order of their

discriminating power. Here, large weights denote 'the most powerful discriminating variable'; variables with large weights contribute the most towards the differentiation of the groups. Assumptions underlying DA are the following (Burns & Burns, 2008, pp. 590-591)**:**

- The observations are a random sample; each predictor variable is normally distributed.
- There must be at least two groups or categories (e.g., Social and Enterprising group) with each case belonging to only one group so that the groups are mutually exclusive and collectively exhaustive (all cases can be placed in a group). The attribute(s) used to separate the groups should discriminate between the groups so that group or category overlap is non-existent or minimal.
- Each group or category must be well defined and clearly differentiated from any other group(s). The groups or categories should be defined before collecting the data.
- Group sizes of the dependent variables should not be grossly different and should be at least five times the number of independent variables.

Discriminant Function Analysis (DA) predicts group membership, using the following procedure:

- The category to which individuals belong can be predicted by their scores on the IVs (predictor variables).
- Differences between groups are explored based on the attributes of the cases, indicating which attributes contribute the most to group separation. The chance of misclassification of cases into their groups/categories is reduced. Misclassification would be observed if the degree of overlap is high, suggesting a poorly performing DA function.
- Efficacy of the function can be assessed using Chi-square tests (statistical significance), to determine if the function accurately separates groups.
- A normal distribution of discriminant scores for each group is a favourable outcome of the DA process.

Profile correlation is an alternative method of measuring congruence as outlined by Xu and Li (2020). Xu and Li (2020) compared four profile-based conceptual congruence indices viz., Euclidean distance, angular agreement, profile deviance and profile correlation. The authors employed 'dominance analysis' to reveal the most optimal approach to the operationalisation of interest congruence. Profile correlation demonstrated complete dominance, meaning that as a predictor, it displayed the highest level of accuracy in comparison with the other approaches. Profile correlation was found to outperform the

remaining indices in the prediction of, inter alia, job satisfaction and turnover intention. These authors regard profile correlation as the optimal way to operationalise/measure interest congruence.

Profile correlation is a profile-based conceptual approach, which is based on Holland's typological model (Xu & Li, 2020). Nye et al. (2018, as cited in Xu & Li, 2020) maintain that profile-based approaches reliably produce significant 'congruence-criterion' relationships. In contrast, top-letter(s)-oriented approaches fail to capture the nuances associated with congruence and therefore do not promote optimal measurement of congruence. Owing to the fact that they comprehensively account for RIASEC information, profile-based approaches to the operationalisation of congruence are viewed as accurate. Xu and Li (2020) comment that the inclusion of 'less endorsed' RIASEC interests when calculating congruence enriches the operationalisation of congruence and provides valuable information regarding disliked or unappealing tasks.

Pattern congruence is at the heart of Holland's RIASEC Typology, i.e., a match between person and environment. Profile correlation endorses and preserves Holland's theoretical emphasis on the RIASEC pattern. The operationalisation (calculation) of interest congruence is discussed by Xu and Li (2020). In terms of calculation, profile correlation is the correlation between individual and occupational RIASEC scores. There is no structural assumption associated with profile correlation. "Profile correlation quantifies congruence using the Pearson correlation between interest and occupational RIASEC scores" (Xu & Li, 2020, p. 5). Moreover, "…profile correlation focuses on the relative strength of the RIASEC scores (i.e., the rank order) within each profile and indicates the deviance of the RIASEC patterns" (Xu & Li, 2020, pp. 5-6).

Idiosyncratic Structure vs. Normative Model in Interest Congruence. Xu and Li (2020) assert that the calculation of congruence is an "individual-centred process" that fits the idiosyncratic structure of RIASEC. Applying a normative RIASEC model, which is sample-bound, in congruence research, overlooks individual differences (possibly occupational differences too), thereby distorting the assessment of congruence. Profile correlation does not depend on the normative People-Things (P/T), Ideas-Data (I/D) and RIASEC structure. Xu and Li (2020) caution against reliance on a normative model that describes RIASEC scores that are 'population-specific' rather than 'individual-specific' (idiosyncratic structure) scores. They argue that applying a normative model to the operationalisation of congruence at the individual

level may falsely put "population structural constraints in individual profiles" (p. 6), thereby producing inaccurate congruence results. Additionally, there is variance in the adherence of peoples' individual RIASEC profile scores to the normative model, e.g., a person could endorse Realistic and Social in the same way (Xu & Li, 2020).

2.4.2.2 Code Assignment to Improve Research Outputs. According to Lent and Lopez (1996), "the greater the specificity in assigning codes, the greater the chance of demonstrating theory-predicted relations" (as cited in Chartrand & Walsh, 1999, p. 140). Su et al. (2015, pp. 89-90) highlight the importance of the level of analysis in congruence research. The authors view P-E fit as a multi-level construct. Accordingly, they caution that "meaningful relationships may be found only between a specific form of fit and career outcomes at the corresponding level". Chartrand and Walsh (1999) caution that when calculating congruence, it would be naïve to compare Holland's codes (a typical measurement unit for congruence), as these themes are reflective of broad personality styles, to which job functions might not necessarily correspond. However, the current study used core MBA/MBL and Specialised Master's courses (academic environment) to represent Holland's 'environment'. In this way the problem of environmental complexity as would pertain to a variety of jobs (at face-value and in greater detail) would largely be avoided. Whilst part of the MBA group of the study were employed at the time the study was conducted, these participants' occupational environments were not the focus of the research. This study considered academic environment as the main context in the proposed congruence research. (Refer to the methodology section for an outline of the intended code assignment process for this study).

2.4.2.3 The Need for a Paradigmatic Shift towards Experimental Research and Increased Rigour in Congruence Research Design. Spokane et al. (2000) reviewed the person-environment congruence concept and Holland's Typology theory. The authors argue that "congruence appears to be a construct in search of a suitably complex research paradigm" (Spokane et al., 2000, p. 176). Their recommendations are a revised research agenda that is embedded in person-environment psychology and a shift in focus from correlational to experimental designs. The authors highlight the dearth of experimental, quasi-experimental and longitudinal studies in analogue and natural contexts, arguing that knowledge advancements in congruence and career development research are contingent on the aforementioned paradigmatic shifts. Moreover, Chartrand and Walsh (1999) assert that congruence research should be rooted in meaningful questions that serve to expand existing theoretical frameworks such as Holland's; a key query of theirs is whether people tend to become more like their

environments. Both Gottfredson and Richards (1999) and Chartrand and Walsh (1999) agree that during congruence research, people and environments must be assessed with valid and reliable measures, so as to avoid misleading research outcomes. As mentioned at the beginning of this chapter, Chernyshenko et al. (2019) maintain that an avid exploration of the manner in which interest congruence affects psychological well-being is required. In the words of Chernyshenko et al. (2019): "…focusing on interest congruence can dramatically increase the magnitude of relationships and may help to clarify and advance theory" (p. 92).

2.4.2.4 A Revised Congruence Research Agenda – Pitfalls to be Avoided. "The lack of evidence that congruence can be altered underscores our limited causal understanding of the phenomena" (Spokane et al., 2000, p. 179). With a revised research agenda of Holland's theory in mind, Spokane et al. (2000) call for "more direct tests of the interactive propositions of the theory, and a more appropriate balance between correlational and experimental designs" (p. 179). Moreover, the authors assert that the assumption of linearity that is embedded in the traditional paradigm of congruence must be questioned – hence mediator and moderator designs are viewed as a step forward in congruence research. Cross-paradigm research is a further recommendation for the improvement of congruence research. The current study will delve into the fields of psychology as well as management and leadership development, where appropriate.

2.4.2.5 Moderating Effect of Congruence. According to Baron and Kenny (1986), a moderator denotes "a qualitative (e.g., sex, race, class) or quantitative (e.g., level of reward) variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable" (p. 1174). Hence, a third variable (Z) is said to moderate the relationship between two other variables (X and Y) if the degree of the relationship between X and Y is affected by the level of Z (Miles & Shevlin, 2001). Baron & Kenny (1986) state that

> …moderation implies that the causal relation between two variables changes as a function of the moderator variable. The statistical analysis must measure and test the differential effect of the independent variable on the dependent variable as a function of the moderator. The way to measure and test the differential effects depends in part on the level of measurement of the independent variable and the moderator variable (p. 1174).

In an editorial, Andersson et al. (2014) explained interaction effects within and across levels of analysis. Regarding interaction effects within the same level of analysis, the authors suggest that researchers should elucidate the mechanisms which link the independent variable to the dependent variable. Thereafter, an explanation of the manner in which the interaction variable changes the mechanisms must be provided. Andersson et al. (2014) remind researchers to 'theoretically rule out' possible reverse interaction effects between the main variable and the moderating variable.

According to Andersson et al. (2014), a moderation effect is also known as a product term, a multiplicative effect or an interaction effect. These authors allude to the fact that the theoretical contribution of a study is enhanced by the clarity with which researchers are able to explain the theoretical mechanisms underpinning any interaction effects.

The heartbeat of social science theory is the identification and specification of relevant and key interaction effects that pertain to the links between independent and dependent variables (Andersson et al., 2014). Interaction effect identification indicates "the maturity and sophistication of a field of inquiry" (Andersson et al., 2014, p. 1064). For theoretical contributions to be considered satisfactory, interaction effects have to be explained and should be accompanied by theoretical reason which indicates the value (i.e., improved theory/theory development) of including the interaction.

Andersson et al. (2014) highlight the importance of distinguishing differential prediction (circumstances where the nature of the relationship of X on Y varies as a function of Z) from differential validity (the strength of the relationship of X on Y varies as a function of Z). They assert that moderated multiple regression suitably tests differential prediction. On the other hand:

> Differential validity is typically tested via subgroup moderation: the sample is split into two or more groups based on the level of the moderator variable, and t-tests of the correlation coefficients and $\chi 2$ tests are performed to assess the strength of the moderation effect and differences among groups (Andersson et al., 2014, p. 1064).

According to Andersson et al. (2014), the choice of a moderating variable should be theory-based. The following difficulties in the explanation of interactions are outlined by the authors:

- When researchers do not explain or theoretically justify the direct effect, it results in confusion as to what baseline effect the interaction is meant to modify.

- The explanation of the moderating variable's influence is subject to the theory employed by the researcher.
- Due to the fact that different theories may indicate opposing main effects, it is vital to specify the nature and direction of the main relationship to avoid ambiguous theorising.
- Theoretical description and justification of the direct relationship is vital for the interaction to make sense.
- The impact of the moderating variable on the relationship between the independent and dependent variables should be prioritised, as opposed to an explanation of the direct effect of the moderating variable on the dependent variable.
- Andersson et al. (2014) concede that a moderator may or may not impact the dependent variable. They also assert that the moderating and independent variables "should not be theoretically related as this would imply mediation" (p. 1065).
- The direction of the relationship in the interaction effect must be theoretically explained, so that there is clarity regarding the main mechanism vs. the interaction effect. The issue here is that causality can be bidirectional, thus the aforementioned specification is important.

> In some cases, there is little empirical literature one can use to justify the proposed relationship. In such cases, it is even more important that the moderation effect is clearly explained and that the choice of moderating variables, as well as the proposed nature and effects of these on the direct relationship, is clearly guided by theory (Andersson et al., 2014, p. 1066).

Andersson et al. (2014) make the following recommendations towards the explanation of within-level interaction effects:

- Identify the theory used to explain the direct and moderating effects.
- Apply the theory to the research question, and explain the direct effect as well as the mechanisms which underpin it.
- Theoretically justify the choice of a moderator.
- Elucidate the mechanisms by which the moderating variable has an impact on the dependent variable. It should be clear how the direct effect (if found) is different from the interaction effect.
- "Explain how the interaction changes the mechanisms that explain the direct relationship. Using theory, specify arguments such as "the impact of X on Y is strengthened when Z is

present because Z changes the mechanism in this manner …" or "the influence of X on Y is reduced in the presence of Z because the mechanism is weakened in this way …" (Andersson et al., 2014, p. 1067).

- Ensure that there is a difference between the explanation of the interaction effect and the explanation of the direct effect, as well as a different explanation regarding the manner in which the moderating variable impacts the dependent variable.
- Theoretically rule out a reverse interaction (i.e., independent variable X is a moderator of the relationship between the moderating variable Z and the dependent variable Y). This situation would only present itself if Y and Z are theoretically linked.
- Unpack the discussion of the research results from a theoretical perspective. Emphasise the substantive meaning of the results regarding the theoretical understanding of the phenomenon being investigated. Indicate the manner in which the results inform theory and research going forward. Specify any changes to the nature and strength of the focal relationship due to the inclusion of the interaction. Results that are non-significant regarding moderation effects also hold insightful value.

2.5 Locating Hypotheses of the Study within Literature

Sutton and Staw (1995) assert that theory development in research requires the provision of a logical reason why certain empirical relationships are anticipated. Accordingly, the following section will provide the logic underlying the aim of the current study, viz., demonstration that MBA/MBL core courses have a psychological impact beyond the technical training provided to students. Exposure to academic training that is job-related can catalyse a critical thinking/comparative process within the student, who juxtaposes their academic learning experience with the practical conditions in their current or most recent occupation reality. This reflection might be expressed (self-reported perceptions) as measured changes in vocational behaviour (altered levels of vocational identity, career decision-making self-efficacy and career commitment).

In line with the views of Sutton and Staw (1995), the following theoretical specifications of the current study are made, according to the recommendations by Ployhart and Vandenberg (2010):

- The specified theory of change is Holland's Typology, which recognises that Types are viewed as the outcome of the interaction between personal and cultural forces (parents, peers, biological heredity, culture, social class and the physical environment) and that they

"are often active rather than passive recipients of environmental influence, for they both seek and avoid environments, problems and tasks" (Holland, 1985, p. 3).

- Longitudinal panel data i.e., observations nested in time (Antonakis et al., 2010) will be collected. It is anticipated that the level of change will occur at the micro-level, seeing that individual participants' vocational behaviour change as well as vocational personality type will be measured.
- An explanation of why the researcher expects that change will occur has been addressed in line with the views of Sutton and Staw (1995).
- Ployhart and Vandenberg (2010) suggest that the observed form of change relative to the hypothesised form of change should be graphed.

The hypotheses of this study (as outlined in Chapter 1) stem from Holland's Theory (1985) and are also rooted in literature (Chapter 2: Literature Review). Antonakis (2017) flags the lack of theory testing (theorrhea) as a disease that plagues the production of useful research. In line with the views of Sutton and Staw (1995), he argues that theory development requires explanation of phenomena through descriptions of the manner in which variables are causally related, reasons for their connectedness and the boundary conditions encapsulating these relations. In this regard, Andersson et al. (2014) state:

> Conceptualized as a contingency hypothesis, moderation can be used to examine the boundaries and limitations of a theory (Boyd, Haynes, Hitt, Bergh, & Ketchen, 2012). In this way, moderation specifies the conditions under which a given theory applies (or not) and thus increases the precision of theoretical predictions (Edwards, 2010). (p. 1067).

As such, the Phase Two study will examine congruence (P-E fit) as a boundary condition in the current study.

Fiss (2007) argues that there is a mismatch between configurational theories and methods, where, theoretically, a configurational perspective emphasises nonlinearity, synergistic effects and equifinality, whilst empirical research prioritises econometric methods which suggest linearity, additive effects and unifinality. The author advances set-theoretic methods as a solution to the mismatch problem. In his article, "Building better causal theories: A fuzzy set approach to typologies in organisation research", Fiss (2011) argues that it is important to know 'what really matters (and to what extent)' when using typologies, as this should clarify the causal structure of a type. The author conceptualises typologies as a combination of core and periphery elements, where core elements would have a strong (rather

than weak) causal relationship with the outcome of interest. In light of the arguments advanced by Fiss (2007; 2011), it is considered that fuzzy set qualitative comparative analysis (fsQCA), when used to refine a typology (such as Holland's RIASEC Typology), might provide a better estimate of the boundary conditions surrounding the relationship between two variables, when the typology is framed as a moderator variable. However, the use of this set-theoretic method goes beyond the scope of the current study.

On a "design-specific approach", Aguinis and Vandenberg (2014) recommend that researchers should study dependent variables which decision-makers find interesting, as well as independent variables that can be altered through the institution of new policies. The chosen dependent and independent variables of the current study satisfy the authors' recommendation, given the implication that the outcomes of the study could affect, inter alia, not only the selection criteria used to place MBA/MBL candidates onto the programme, but also employers' recruitment decisions to hire MBA/MBL graduates because of the added advantage of measured vocational behaviour change.

In their discussion of the gold standard of research designs (the randomised field experiment), Antonakis et al. (2010) suggest that researchers in the social sciences have been slow to adopt research methods that would optimise the accuracy of their measurement of causal effects in non-experimental designs (Antonakis, 2017). With a focus on the consistency of parameter estimates, Antonakis et al. (2010) close their article with the "10 commandments of causal analysis" to guide researchers in making well-informed causal claims, that is, allowing quasi-experimental designs to approximate the gold standard.

Johnson (2001) mentions one of the features of the prospective causal-comparative design: the independent variables (IVs) cannot be manipulated. The author calls them 'attribute variables', indicating that they reflect characteristics of different people and are commonly used in causal-comparative and correlational studies (e.g. college major, type of school, personality trait that is operationalised as a categorical variable). Relationships between variables can be assessed using this method, where data are evaluated with the general linear model. Controlling for confounding variables requires the collection of data on these covariates and entering the variables into the general linear model. Johnson (2001) argues that there is a misconception that causal-comparative research lends itself more to establishing causality than correlational research does. The author debunks this idea, indicating that neither method is superior to the other in making causal attributions. On non-experimental research, Johnson

(2001) outlines several strategies that can be used to establish evidence for causality**.** The causal-comparative design is a non-experimental method which is not the same as the quasi-experimental design (Johnson, 2001). Johnson (2001, p. 7) argues that categorical IVs allow the researcher to make group comparisons, whilst quantitative IVs allow the researcher to make comparisons for different levels of the IV. In Phase Two of the current study, the IV ("academic environment") was categorised by RIASEC types, whilst the dependent variable (DV) was "vocational behaviour".

On the three requisite conditions for establishing causality, Johnson (2001) states that non-experimental research struggles to uphold the second and third conditions, namely, 'the temporal antecedent condition' and 'the lack of alternate explanation condition'. The author argues that the 'research objective' and 'time dimension' (e.g. longitudinal research) are useful in classifiying the type of non-experimental research and distilling the nature of the research process. Johnson (2001) suggests that researchers should use the label "explanatory nonexperimental research" if they aim to test or develop a theory about a phenomenon and explain how and why it operates, including the identification of influential factors related to changes in the said phenomenon. This label suits the research intention of the current study. Johnson (2001) asserts that the panel or prospective study is a subtype of longitudinal research, wherein:

> … the same individuals are studied at successive points over time. The panel or prospective study is an especially important case when interest is in establishing evidence of causality because data on the independent variable and control variables can be obtained prior to the data on the dependent variable from the people in the panel. This helps to establish proper time order i.e. Necessary Condition 2 (pp. 9-10).

Summing up the nature of the current study, using Johnson's (2001) classification recommendation, it can be categorised as Type 9: a longitudinal, explanatory study**.**

Antonakis et al. (2010) assert that a counterfactual argument must be applied to a model's predictions in order to test whether a causal relation is real (Antonakis, 2017). This argument poses the following questions:

- If the individuals who received the treatment had in fact not received it, what would we observe on y for those individuals? Or,
- If the individuals who did not receive the treatment had in fact received it, what would we have observed on y?

The authors state that the treatment effect is the difference in y for the treatment and control groups. They argue that if systematic differences between these groups exist, the counterfactual cannot be observed, effectively obscuring the treatment effect. Moreover, these authors suggest that selection into treatment and control groups must be modelled if consistent estimates are to be obtained. Accordingly, this modelling is the essence of causal analysis in non-experimental settings (Antonakis et al., 2010).

The value of the repeated measures t-test is that it allows the researcher to establish the extent of the difference that exists between participants' scores before and after the treatment. However, there is the concern of order effects, viz. fatigue effect: deterioration of respondents' performance due to boredom and loss of concentration should they become disheartened by the arduous process of being re-assessed (Harris, 1986). Antonakis et al. (2010) refer to the chosen design for this study as a "difference-in-differences model", commonly so called in economics. Regarding the use of this model, Antonakis et al. (2010) suggest the following:

- the fixed effect of group membership accounts for possible differences between the experimental and control groups prior the intervention, i.e., the coefficient of x;
- the coefficient of t denotes the fixed effects of time (where changes in y might be attributed to time); individual fixed effects would represent between group differences; and
- it is vital that $x \cdot t$ is not endogenous – meaning that differences between the groups should be stable over time and the timing of the treatment should be exogenous, i.e., differences in y should not be attributable to unmeasured factors.

The authors state that a comparison of data to determine whether differences are stable across groups pre- and post-treatment can be used to examine the key assumption, namely, "in the absence of the treatment, the difference between two groups is relatively stable over time" (Antonakis et al., 2010, p. 1108). Finally, when using longitudinal panel data, the authors suggest correcting standard errors for clustering on the panel variables.

2.6 Longitudinal Studies

The current study is longitudinal. Qualitative longitudinal research (QLR) involves 'sense-making' of occurrences as they unravel across time. The outcome of such a research design is data that amplifies the nuances of an individual's experience. Such findings are attractive to various stakeholders, including policy makers (Miller, 2015). The manner in which people change and react to change is the focus of longitudinal research (Corden & Millar, 2007, as cited in Winiarska, 2017). Whilst quantitative studies promote statistical comparisons across

time, they struggle to record 'fluid' and context-specific occurrences, meanings and perceptions that intervene in peoples' response to social change Winiarska (2017, p. 6). Winiarska (2017) asserts that investigation of subjective opinions, perceptions, drives and interpretations is the function of QLR, which also recognises context-specific factors and individual details. Temporal changes in participants' attitudes, viewpoints and life experiences are prioritised in QLR. According to Neal and Flowerdew (2003, as cited in Winiarska, 2017), the distinguishing features of longitudinal qualitative methodologies are time and texture i.e., culture of social life which includes personal identities and routes, above subjective reality, social relationships and cultural rituals. The development of people's lives (sense-making through the passage of time) represents the focus of QLR. Trajectories of life, critical experiences, motivations and steps linked to change form part of the QLR content (Morro & Crivello, 2015, p. 267, as cited in Winiarska, 2017).

2.6.1 Sampling, Data Collection and Imputation Techniques. A working paper by Winiarska (2017) investigates applications of qualitative longitudinal research (QLR), including its potential and methodological difficulties. Researchers are advised to reflect on the research methodology. Von Maurice et al. (2017) address opportunities and challenges associated with longitudinal designs. The importance of sampling and selectivity at the outset of 'large scale' longitudinal studies is emphasised. On the issue of *data collection time intervals* Winiarska, (2017) posits that the recruitment strategy employed by the researcher can assist or hinder the data collection efforts. Wang et al. (2017) introduce and delineate the conceptual, methodological and practical issues commonly associated with longitudinal studies. The correct length of the time interval between adjacent time points in a longitudinal study is critical because it directly affects the observed functional form of the change trajectory and in turn the inference we make about the true pattern or change over time (Chan, 1998, as cited in Wang et al., 2017, p. 10). Regarding *imputation techniques*, Newman (2014, as cited in Wang et al., 2017) argues that missing data techniques are fraught with controversy owing to these misconceptions: i) listwise and pairwise deletion require reduced assumptions in comparison to ML and MI techniques; and ii) multiple imputation is a form of data fabrication of the information that was not observed. This author argues that a researcher must choose a technique to deal with missing data and cannot simply ignore this decision

2.6.1.1 Sampling. Large scale longitudinal designs require samples that represent the target population so as to avoid biased estimates regarding the phenomenon being assessed. Von Maurice et al. (2017) suggest that when sampling, heterogeneity of participants must be

considered along the expected trajectories (behaviour patterns) of the sample. This observation should promote inferences made statistically.

Winiarska (2017) highlights that the establishment and preservation of an adequate sample is vital in QLR. According to Winiarska (2017), the appropriate sample size requirement in QLR remains undefined. Instead, 'theoretical saturation' represents satisfactory data collection. Robinson (2014, as cited in Winiarska, 2017) outlines the following QLR sampling guidelines:

- using inclusion and exclusion criteria to define the target population (sample universe);
- choosing a sample size relative to the research objectives (this is an iterative process during the course of the research);
- choosing a sample strategy, be it purposive sampling or random sampling; and
- sample sourcing accounting for informed consent and the probability of 'self-selection bias'.

Sample Attrition. On attrition and retention in qualitative longitudinal research (QLR), Neale (2013, as cited in Winiarska, 2017) highlights the tension researchers face between trying to preserve an adequate sample size and allowing participants the right to opt out of the study at any time as a function of their informed consent. The dilemma here is that the researcher needs data but participants have the right to withhold information. Therefore, Weller (2012, as cited in Winiarska, 2017) suggests strategically 'attaching' respondents to the research through the establishment of a relationship via emails and regular updates on the research project, e.g., informing my post-graduate management student target sample of the good outcome of data collection thus far, to assist me in preserving the data quality. Creative ways to retain respondent participation include offering incentives and providing them with summaries of the results of prior phases/waves of data they provided to the researcher (Weller, 2012, as cited in Winiarska, 2017). Although I was not able to provide such results, I was able to write a letter to accompany my final Qualtrics link. Interestingly, Laurie and Lynn (2008, as cited in Wang et al., 2017) highlight the offer of monetary incentives as a participant drawcard in longitudinal research. Moreover, Laurie (2008, as cited in Wang et al., 2017) suggests that researchers should adopt a 'continued contact' approach to keep in touch with participants and retain their commitment/interest across the duration of the research. Tracking and bias in longitudinal studies in the first wave of panel studies are usually fraught with non-responses and this issue becomes amplified during subsequent waves (Von Maurice et al., 2017). Panel care is recommended for the preservation of high response rates. Participant fatigue is problematic,

which is compounded by the fact that the offered participant incentives might not be appealing to all potential respondents (Von Maurice et al., 2017). Inability to reach panel members may be due to them relocating and not advising the researcher of changing contact information. Laurie (2008, as cited in Wang et al., 2017) advises that multiple forms of participant contact information should be sought at the beginning of the study.

The complexity of longitudinal designs involves maintaining participant interest over time, and preserving cordial relationships with gatekeepers at target institutions, who have access to sample contact/personal information which external researchers might not be privy to (Von Maurice et al., 2017). Design weights can be used to correct unequal selection probabilities, which may bias statistical analyses and result in misleading outcomes. Given the negative impact of total nonresponse and participant refusal, nonresponse adjustments of design weights may be used by researchers for statistical inference. Such design weights may be used to remedy 'coverage errors' and subdue standard errors. Von Maurice et al. (2017) assert that assessing wave nonresponse is a complex task. They maintain that mixed-mode surveys (mail & telephone) can optimise response rates if they appeal to the target population. Survey instruments can be configured to suit participants so as to reduce 'respondent burden'. Selection bias still plagues longitudinal research as some respondents tend to have an inclination/propensity to wave nonresponse. Item nonresponse is commonplace for highly sensitive questions, which respondents may choose to ignore. Therefore, researchers should consider the effect of this issue to avoid biased estimates, which invalidate research outcomes (Von Maurice et al., 2017).

Regarding participant attrition in longitudinal studies, Newman (2014, as cited in Wang et al., 2017, p. 18) states that more data are tantamount to more useful information, which can increase statistical power and reduce bias. The author indicates that when respondents fail to respond to surveys at initial measurement times, researchers should still attempt data collection from such individuals at later waves of the study. (Note: in the current doctoral study, the researcher split the longitudinal study into 2 phases, separated by a 5- to 6-month gap. During Phase One, participants were informed of the study's prolonged nature).

Attrition i.e., construct- or variable-level missing data, is a feature of longitudinal modelling e.g., when answers for an entire scale, construct or observation wave are missing. As a result, one might end up with a dataset in which respondents' completion of the survey might be chequered, where some of the variables have been observed and others not. Newman

(2014) concludes that the majority of missing data in longitudinal studies "tends to be MAR [missing at random] e.g., because missing data at Time 2 is related to observed data at Time 1" (p. 18, as cited in Wang et al., 2017). Von Maurice et al. (2017) recommend imputation of missing values to correct for wave and item nonresponse**.** Here, responses emanating from all waves can be used for each panel member. Moreover, full information maximum likelihood estimation can be applied. The authors conclude that panel attrition and related/concomitant bias is a serious limitation of longitudinal designs (Von Maurice et al., 2017).

2.6.1.2 Data Collection Time Intervals. Wang et al. (2017) introduce and delineate the conceptual, methodological and practical issues commonly associated with longitudinal studies. The correct length of the time interval between adjacent time points in a longitudinal study is critical because it directly affects the observed functional form of the change trajectory and in turn the inference we make about the true pattern or change over time (Chan, 1998, as cited in Wang et al., 2017, p. 10). The correct time interval length in longitudinal research rests on the particular substantive change phenomenon of interest. Therefore, it depends on the behaviour of the substantive construct, its latent change process across time, including the environment in which the process of change occurs. Variables that impact the type and rate of change also feature as elements of the environment in which change manifests (Wang et al., 2017).

According to Wang et al. (2017), successful and well-timed longitudinal studies enable the "true pattern of change to be observed" (p. 10). Data collection time intervals must be sufficiently spaced to allow for the aforementioned observation of change. The authors caution against abrupt and prolonged time intervals, suggesting that such timeframes corrupt and confound the true patterns of change, resulting in compromised observations. Chan (1998, as cited in Wang et al., 2017) considers the appropriateness of time intervals in relation to the change phenomenon of interest, indicating that change processes that take a short time to manifest, e.g., activation and inhibition of mood states as experimentally controlled occurrences, would require shorter time intervals (ranging from several hours to days vs. weeks, months and years) and overall time than prolonged change processes. Wang et al. (2017) argue that owing to the static nature of theories of research phenomena, researchers battle to accurately and with certainty determine the optimal time interval to be applied when conducting longitudinal research. These authors point out the fact that even when dynamic theories focused on change processes are used by researchers, the specific duration of temporal dimension that account for the occurrence of substantive processes over time are rarely

stated/communicated. Similarly, the aim in qualitative longitudinal research (QLR) is capturing different patterns of change and themes. Regarding data analysis in QLR, reflexivity, interpretation and the 'grounding' of the results in a broad theoretical context constitute the essence of analysis (Yates, 2003, as cited in Winiarska, 2017). QLR data is complex, requiring longitudinal and cross-sectional approaches to distil narratives (patterns) during a single wave/phase and keeping track of the manner in which the narratives transform/behave with the passage of time (Winiarska, 2017). Data analysis of QLR is intricate and requires the development of a coding system and themes located in the respondents' personal and professional lives within the research context (Winiarska, 2017, p. 15).

Chan (1998, as cited in Wang et al., 2017) outlines basic and practical decision-making strategies employed by researchers embarking on longitudinal studies, viz., consideration of resource constraints (time and money), perceived opportunities (e.g., access to a large sample/institution for data collection), availability of cooperative gatekeepers, availability of research grants and general respondent enthusiasm for participating in the study. As such, this author asserts that deviations from correct time intervals is commonplace, given the 'pragmatic' and 'atheoretical' decision-making process regarding time intervals between data collection. A limitation of longitudinal research is that the interpretation of findings may be incorrect as a result of inaccurate observation of the patterns of change over time (Chan, 1998, as cited in Wang et al., 2017).

Newman, one of the authors of Wang et al. (2017, p. 8), opines that cross-sectional research is simple to conduct but regularly estimates the wrong parameters. This author praises the utility of cross-sectional designs for theoretical processes involving short time frames. Moreover, cross-sectional designs may point to differences e.g., cross-sectional differences in attitudes or job satisfaction. A 2-study design comprised of cross-sectional data and fortified with lagged/longitudinal data is deemed by Newman (in Wang et al., 2017, p. 8) as appropriate. He asserts that "almost all psychological theories are theories of change (at least implicitly)". In contrast to Ployhart and Vandenberg (2010, as cited in Wang et al., 2017, p. 8), he argues that "cross-sectional theory" does not exist, only longitudinal theory exists with "models and evidence" being of a cross-sectional nature. As such, cross-sectional data are devoid of temporal external validity. Newman (in Wang et al., 2017, p. 8) argues for the indispensability of longitudinal and time-lagged designs, indicating their advantages: i) causal priority; ii) future prediction; iii) change; and iv) temporal external validity. He highlights the following: 'Longitudinal measurement equivalence' i.e., whether the measurement metric of the concept

or the meaning of the concept may change over time, and 'temporal external validity' i.e., the extent to which an effect observed at a single point in time generalises across other occasions, which includes longitudinal measurement equivalence. Therefore, the establishment of temporal external validity and longitudinal measurement equivalence, as indicated by the aforementioned researchers, would be an ideal outcome of the current doctoral research.

2.6.1.3 Data Quality Control. The theme of Carić and Kocijan's (2019) article extends the aforementioned suggestions made by various researchers, by further exploring the theme of data quality in the context of longitudinal studies. The "Croatian Birth Cohort Study" served as a case study of their research. The predictors and sources of substandard longitudinal data quality are categorised as follows: security and design questionnaire issues; single- and multi-source issues; Quality Assurance workflow concerns. Carić and Kocijan (2019) also recognise the following sources of error: sample attrition, temporal and financial constraints, recall bias and panel conditioning (i.e., when the initial experience of taking part in a survey affects/primes response in the next wave of the study), as outlined in extant literature. Moreover, they introduce models for error elimination via detection and prevention for the elevation of data quality. An example of security problems (hacking) could be an anonymous respondent changing other respondents' content. To counteract such occurrences, data collection research tools such as Qualtrics have features that promote data validity, e.g., a "save progress" function to avoid spoilt data due to participants rushing through the survey, encryption of collected data in its original form, and a streamlined and visually appealing response format (online user-experience) to facilitate completion of the survey and preserve participants' interest. Carić and Kocijan (2019) highlight the importance of advanced validation features for data input, which render the process of data cleaning less taxing. The following error elimination techniques are outlined:

- **Prevention interventions**, which involve i) the management of attrition rate: the authors assert that the attrition rate must feature in the Results section of a study as it represents the behaviour of participants; and ii) data documentation design: a process of documenting the intricacies/details of the data collection, e.g., confounding variables, strategy for data description and methods of observation during data collection.
- **Detection techniques,** which involve the use of the technical tools referred to as "Exclusive data analysis tool" and "Traceability". According to Carić and Kocijan (2019), the topic of 'data quality' is yet to be expanded research-wise. The authors argue that more research needs to be done on data cleaning, transforming, building and error detection during the

time of data collection as well as issues associated with databases, in the context of social science and humanities. They assert that researchers should not ignore the value of FAIR (Findability, Accessibility, Interoperability, and Reuse of digital assets) guiding principles for management of research data and stewardship i.e., the ability of computational systems to locate, access, reuse and interoperate data (Wilkinson et al., 2016).

2.6.1.4 Imputation Techniques. Voluntary research participation necessitates that 'total nonresponse' and 'wave nonresponse' must be addressed when initially compiling a sample (Von Maurice et al., 2017). Total nonresponse happens when people refuse to take part in the study, whereas wave nonresponse occurs when participants partake in a few waves only. Unlike in cross-sectional studies, longitudinal research designs require that wave nonresponse must be considered when deciding on an initial sample size. Von Maurice et al. (2017) used pilot studies to determine response rates over time and ascertain the 'expected' extent of nonresponse. Newman (2014, as cited in Wang et al., 2017) states that Missing data occurs at 3 levels, viz., item-level missingness, variable/construct-level missingness, and person-level missingness. Low statistical power and parameter estimate bias are the outcome of missing data. The three mechanisms of missing data are the following: missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR). Listwise deletion single imputation techniques, pairwise deletion, maximum likelihood and multiple imputation represent typical missing data techniques. Maximum likelihood (ML: tm algorithm, Full Information ML) or multiple imputation (MI) techniques are recognised as superior mechanisms for the management of missing data. Newman (2014, as cited in Wang et al., 2017) maintains that 'single imputation techniques' (e.g., mean substitution, stochastic regression imputation) are not useful as they overestimate sample size and underestimate standard errors and p-values. Newman (2014, as cited in Wang et al., 2017) states:

> In multiple imputation, missing data are filled in several different times, and the multiple resulting imputed datasets are then aggregated in a way that accounts for the uncertainty in each imputation (Rubin, 1987). Multiple imputation is not an exercise in "making up data"; it is an exercise in tracing the uncertainty of one's parameter estimates, by looking at the degree of variability across several imprecise guesses (given the available information). The operative word in multiple imputation is *multiple*, not imputation (p. 18).

Schafer & Graham (2002, as cited in Wang et al., 2017) asserts that ML and MI techniques were developed for variable-level missingness within the MAR mechanism. The

ML and MI techniques lead to less biased estimates and accurate hypothesis tests when applied in longitudinal designs (Newman, 2003 as cited in Wang et al., 2017). This author argues that ML missing data techniques are the default methods in Mplus, LISREL, HLM and SAS Proc Mixed and states that it is inexcusable to omit ML or MI missing data techniques from longitudinal designs.

2.6.2 Ethical and Practical Considerations. Miller (2015) reflects on researchers' responsibilities in qualitative longitudinal research (QLR). QLR involves a process of regressing ('going back') to acquire further accounts of personal experiences over time. In this regard Miller (2015) aptly asks: "How does the passage of time and changes in participants' lives alter research relationships, interpretations of data and researcher responsibilities? (p. 1)". According to Winiarska (2017), a researcher-participant long-term relationship necessitates reflexivity regarding self-disclosure of personal information. This means maintaining a professional distance whilst preserving the researcher-participant relationship. When researchers and respondents share socio-demographic traits or group associations of life experiences, this may undermine/cloud the researcher's ability to remain objective and neutral (Winiarska, 2017).

QLR requires the researcher to acknowledge the symbiotic relationship between the researcher and respondents. To this end, Tuval-Mashiach (2017, as cited in Winiarska, 2017) suggests that researchers should answer the following questions when analysing the data: i) What did I do? (state a definite paradigm and methodological approach); ii) How did I do it? (a clear description of actions taken and how analysis was conducted); iii) Why did I do it? (justifying decisions made throughout the study, be they practical or methodological; and reflexivity of the researcher). "Methodological flexibility" must be a characteristic of QLR, given the iterative nature of questions posed and interpretations made as concepts surface. Winiarska (2017) states that methodological transparency must accompany the flexibility to safeguard the validity and relevance of the data and its interpretations. Regarding reflexivity, the following, inter alia, represent sources of bias which threaten the validity of QLR: the researcher's preference for certain theories and interpretation, and their strengths, methodological skills and values (Norris, 1997, as cited in Winiarska, 2017). Anonymity, confidentiality, protection of sensitive/private data and informed consent represent ethical issues that are part of QLR. Moore (2012, as cited in Winiarska, 2017, p. 18) suggests the use of an 'anonymisation code book' which contains the procedures followed to safeguard participants' information e.g., aggregating captured data, generalising case studies and

excluding descriptive characteristics which could expose participants. On anonymisation, Taylor (2015, as cited in Winiarska, 2017) maintains that it is difficult to uphold this ethical principle without omitting the "contextual richness" that is the hallmark of data saturation in QLR. Miller (2015) suggests that researchers are meant to empathise with respondents' individual constructions of time, which may not conform to those of the masses. There are ethical and practical considerations linked to QLR; QLR necessitates prolonged 'informed consent'.

2.7 Chapter Summary

In this chapter a case is made for the value of an MBA to various stakeholders (organisations, students and business schools). Criticisms of MBA programmes are reported and various arguments by different researchers are put forward regarding the 'Traditional MBA versus Specialised Master's Programme' debate. The psychological impact of MBA programmes is presented and the nature-nurture leadership debate is outlined. The link between Management and Leadership is indicated alongside the difference between Management and Governance. A detailed account of private and public sector literature is introduced. Vocational behaviour indicators of the current study are unpacked according to the views of several researchers. Holland's Typology is explained as the theoretical model for the study, and a focus on P-E fit (congruence) and its operationalisation is emphasised. The value of locating hypotheses in literature is included. An account of longitudinal research designs and their attendant issues is detailed. This chapter closes with a note on the ethical and practical considerations in longitudinal studies.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter describes the research paradigm, research design and approach of the study to the investigation and evaluation of management education (Independent Variable). The research process, the operational definition of vocational behaviour (Dependent Variable), a description of the sample, the measuring instruments and data-capturing process as well as data analyses, are presented. Harris (1986) suggests the following sub-sections of the method: Design, Subjects, Apparatus and/or Materials and Procedure. Accordingly, the aspects of the method employed for this study are presented below. Furthermore, an account of the research ethics that are pertinent to the study is presented and the chapter concludes with a summary.

3.1 Research Paradigm

In recognition that observation is fallible and that the truth can therefore only be approximated and never seamlessly explained, this study leaned towards a post-positivist paradigm. According to Gray (2013), post-positivism relies on inferential statistics to assign probabilities that research observations are right. This study followed a deductive approach by making use of hypotheses to test, amongst other things, part of Holland's (1985) theory. The study investigated the impact of post-graduate management education (e.g. MBA/MBL core courses and Specialised Master's programmes) on the vocational behaviour of MBA/MBL and Specialised Master's candidates. Accordingly, vocational behaviour was operationalised by five indicators, viz., career decision-making self-efficacy, vocational identity, work identity, career commitment, and vocational interest/personality (RIASEC types defined by Holland, 1985).

3.2 Research Design

A prospective causal-comparative design (detailed on p. 80) was used to address the research questions.

3.2.1 Phase One. This phase entailed a cross-sectional study involving post-graduate management students in various programmes. A between-subjects design was employed. The independent variable (IV) was the congruence (P-E fit), and vocational behaviour (career decision-making self-efficacy, vocational identity, work identity, career commitment and vocational interest/personality) was the dependent variable (DV). It was predicted

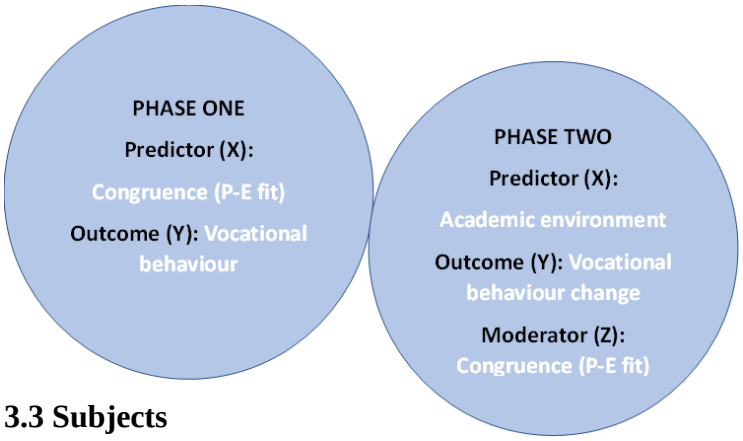
(experimental hypothesis) that the participants' choice of academic environment (IV) was associated with their vocational behaviour (DV).

3.2.2 Phase Two. This phase entailed a longitudinal study involving post-graduate management students in various programmes. A within-subjects design was employed for the different groups (MBA/MBL and Specialised Master's groups) to address the research questions. The independent variable (IV) was the academic environment i.e., academic programme, whereas the dependent variable (DV) was vocational behaviour change. P-E fit (congruence) was the moderator variable. It was predicted (experimental hypothesis) that exposure to an academic programme will effect vocational behaviour change in the behaviour of the groups, i.e., indications of any changes in the levels of the dependent variable of the study would imply the effect of the academic programmes on the vocational behaviour of the groups.

The following diagram, which also appears in Chapter 1, illustrates the relationship between variables as they pertain to Phase One and Phase Two of this study:

Figure 3

Relationship Between Variables of the Study



3.3 Subjects

Phase One of the study used a purposive sample of n = 360 male and female students studying toward a post-graduate management qualification (e.g., MBA/MBL, Specialised Master's). The Phase Two participants are a subsample of the Phase One sample. However, the demographic make-up of this sub-sample did not necessarily mirror the Phase One demographic profile, as most participants in Phase One did not respond to the Phase Two survey. There was a severe sample attrition. From the initial sample of 360 respondents in the Phase One study, only 133 respondents participated in the Phase Two study. However, among these a further attrition occurred as 29 of the respondents omitted significant information in

their responses. Accordingly, Phase Two of the study used a sample of 104 post-graduate students. In Phase One of the Study there were additional respondents that provided data on academic institution, academic programmes and academic environment choice. Accordingly, the sample size of N = 370, rather than N = 360 is reported. In Phase Two of the study there was missing data for one respondent on academic programmes and academic environment. Accordingly, the sample size of N = 103, rather than N = 104 is reported. However, the changes in sample size did not significantly affect the overall results. Purposive sampling involves a deliberate sample selection process; in this way it can be deemed non-probability sampling (Oescher, n.d.). When the researcher employs purposive sampling, a decision is made to select participants based on their characteristics; the idea being that the researcher would like to 'cherry-pick' participants in order to ensure that the treatment is carried out correctly. Accordingly, the sample for this study was carefully considered, with the aim to isolate the impact of the programme type (MBA/MBL or Specialised Master's) on the outcome variables of the study. Oescher (n.d.) suggests that a limitation of purposive sampling is the difficulty in generalising the research findings to a population. At two out of three business schools, the APIL Battery (Taylor, 2013) is routinely used for admission onto their respective academic programmes. The full APIL Battery produces eight scores: fluid intelligence, speed of information processing, accuracy of information processing, flexibility of information processing, learning rate/automatisation, total amount of work done in the automatisation exercise, memory and understanding of the automatisation material, and transfer (Taylor, 2013). The targeted samples were drawn from a school of governance and various business schools and universities, all located in the Gauteng Province, South Africa. The *target population* of the study was post-graduate management students studying towards an MBA/MBL degree and Specialised Masters degrees (within a Business School; or School of Governance). Such a target population would be found in a variety of Business Schools, Schools of Governance and Universities, across South Africa. However, the researcher confined the data collection to six academic institutions located in the Gauteng Province. This *accessible population*, was within driving distance for the researcher (Johannesburg to Pretoria), thereby enabling Phase One data collection to occur through several visits to the target institutions. The Phase Two data collection process involved the use of electronic Qualtrics links but was undermined by a low response rate. The accessible population may be regarded as a subset of the target population given that it did not include all South African Business Schools, Schools of Governance or Universities offering post-graduate management education.

Given that a non-probability sampling method was employed in the study; the sample selection was not random, thereby possibly restricting the generalizability of the research findings. In keeping with this sampling method, a sampling frame was not used. In this regard, the South African Protection of Personal Information Act (POPI Act) prohibited the researcher from obtaining detailed information (e.g., class lists with students' personal information) of the samples across the institutions targeted by the study.

Data collection procedure: Institutional approval was sought from the target Business Schools, Schools of Governance and Universities, to authorise the execution of the proposed research at their locations. Across the Universities (Specialised Masters), the researcher strategically targeted the same academic programmes (e.g., MCom Marketing Management or MCom Supply Chain Management) to consolidate the groups for the study. For the Phase One study, the researcher manually administered the surveys to the subjects who gave their informed consent to participate in both Phases of the study. A letter on the front of the survey provided the participants with information on the nature of the study.

360 usable surveys were collected for Phase One of the study. For Phase Two of the study 104 usable electronic survey responses were retrieved from Qualtrics. Frequent attempts were made to encourage participation in the Phase Two study via electronic Qualtrics data collection links; however, the response rate remained low (N = 104). In this regard, the researcher kept a log of the reminder emails sent out to the students, an example of which follows: Initial link sent on 25 August 2020; reminder/follow-up email sent on 03 September 2020; reminder/follow-up email sent on 24 September 2020; reminder/follow-up email sent on 12 October 2020; reminder/follow-up email sent on 29 October 2020; reminder/follow-up email sent on 16 December 2020; reminder/follow-up email sent on 05 January 2021; and reminder/follow-up email sent on 14 January 2021.

Participants of the study were of different age ranges and were either specialists or generalists with varying levels of work experience across a variety of sectors in South Africa. Some of the participants had suspended their employment to pursue their studies on a full-time basis. The following biographical information of the participants was obtained through the survey administered: age, gender, home language, ethnicity, current academic course/programme, current occupation and job level/status (or most recent occupation in the case of full-time students), highest qualification obtained, years of work experience and

employment industry/sector. The outcomes on demographic information are presented in Chapter 4, the Results section.

3.4 Apparatus /Measuring Instruments

Five instruments entailing indicators of vocational behaviour, namely, the *South African Career Interest Inventory (SACII), My Vocational Situation (MVS), Career Commitment Scale (CCS), Career Decision-Making Self-Efficacy Scale (CDMSE)* and *Work-Based Identity Scale,* were used to collect primary data. Vocational interest/personality (RIASEC types), vocational identity, career commitment, career decision-making self-efficacy and work identity were measured as latent variables in the study, indicated by self-reports of items of the aforementioned scales. The following section provides an account of the instruments used in the study. The measuring instruments are provided in Appendix A.

3.4.1 South African Career Interest Inventory (SACII). The SACII outlines six vocational personality/interest types found in South Africa. Holland's theory formed the underlying construct domain of the SACII (Morgan et al., 2014). Accordingly, 6 primary RIASEC scales and 6 secondary scales are presented. The secondary scales represent the interpoint distances between the primary scales. For instance, the Realistic–Investigative scale would be viewed as the secondary scale between the Realistic and Investigative primary scales. The items of the scales reflect Holland's RIASEC typology. SACII items are presented as statements to which respondents indicate their agreement or disagreement on a 5-point Likert-type scale ranging from strongly disagree (1) to strongly agree (5). Morgan et al. (2014) obtained satisfactory Cronbach's α coefficients (>.90) for the six scales of the total sample in Study 2 of their research.

3.4.2 My Vocational Situation (MVS). The MVS, developed by Holland, Daiger and Power (1980) is a self-administrable diagnostic tool. The measure has three scales, which measure the constructs of vocational identity (V.I.), occupational information (O.I.) and barriers (B.). The V.I. scale consists of 18 items. The V.I. scale has a true-false response format and is scored in terms of the total number of false responses obtained. In this regard, a high score would indicate a strong sense of vocational identity in the respondent. The O.I. scale, which measures the individual's need for vocational information, is comprised of 4 items. Perceived external obstacles to a chosen occupational goal are measured by the 4-item B. scale. The B. scale has a yes-no response format and is scored in terms of the number of 'No'

responses to the four items. In this regard, a high score would indicate the absence of perceived external obstacles (i.e., environmental or personal barriers).

3.4.3 Career Commitment Scale (CCS). The CCS, developed by Blau (1988), is a 7-item scale, measuring the extent to which individuals are committed to their career. The CSS uses a 5-point scale response format, with a score of 1 representing 'strongly agree' on one end of the scale and a score of 5 indicating 'strongly disagree' on the opposite end of the scale (Southgate, 2005). Items 1, 3 and 7 are reverse scored.

3.4.4 Career Decision-Making Self-Efficacy Scale (CDMSE). This is a measure of self-efficacy expectations pertaining to the successful completion of 50 career decision-making tasks/behaviours. The 50 items in the scale denote career decision-making tasks/behaviours; respondents are required to indicate their self-confidence in relation to successfully completing each task. Items are rated on a 10-point scale, with a value of 0 indicating "No confidence" and a value of 9 representing "Complete confidence". There are five subscales, confidence scores for which are the sum of responses to the 10-point scale items. The subscales of the CDMSE are: Goal Selection, Planning, Self-appraisal, Problem Solving and Occupational Information. The confidence ratings of all 50 items can be summed to obtain a total score of respondents' self-efficacy expectations. Low self-efficacy expectations would indicate high levels of perceived task difficulty and vice versa. The short version of this scale was used.

3.4.5 Work-Based Identity Scale. This is a 36-item scale, which is a South African instrument that measures the work identity of individual employees (Roodt et al., 2009). The following facets of work-based identity are represented by the items of this scale: occupational identity, professional identity, career identity, job involvement, person-organisation fit, work (role) centrality and organisational identification. A 7-point intensity response scale that is anchored at extreme poles is used to rate the scale's items: "To no extent", which indicates low intensity, is represented by the value 1, whilst "To a great extent", which indicates high intensity, is represented by the value 7. Respondents must circle the corresponding value to indicate their answer to each item.

> The reliability and validity of the instrument was determined by submitting the 36-item questionnaire to a first and second level factor analysis to determine factor structure. This yielded a 28-item, uni-dimensional Workbased Identity Scale with a Cronbach alpha of .95 (Roodt et al., 2009) (Bothma & Roodt, 2012, p. 7).

The aforementioned five scales that comprise the variables of the study were administered to the participants to obtain data (test scores) on two occasions (Time 1 and Time 2), separated by a 5-to 6-month gap.

On the potential generalisability of the study, the researcher considered that findings might only be extrapolated to a sub-group of the population that is similar to the sample, i.e. South African post-graduate management education students and graduates (MBA/MBL and Specialised Master's) from business schools and universities that are comparable to those targeted by this study, in terms of the selection criteria used to admit students onto the academic programmes, international accreditation status, and academic rigour. Furthermore, the generalisability of the findings could be enhanced if it were found that the hypothesised model of the Phase Two Study operates in a similar way across the different groups for the study.

3.5 Procedure/Data Collection

For both phases of the study permission was sought from the target business schools, school of governance and universities, all located in the Gauteng Province, South Africa, to conduct the study at their premises. Following admission into the institutions, the researcher acquired consent from the students on the relevant academic programmes to participate in the research. A participant information letter and consent form presented the purpose of the research (see Appendix A). The instruments entailing indicators of vocational behaviour were compiled into a booklet and used to measure the vocational behaviour of the participants. The same booklet was condensed in the form of an electronic Qualtrics link for some participants to complete the survey online. Each scale included in the survey had specific instructions on how participants should respond to the items. The instruments were self-administered by the participants.

Initially, at the start of data gathering in early 2019, the researcher used electronic Qualtrics links to gather the data across all groups for the study. These links were administered through key gatekeepers at the targeted institutions. However, this procedure was highly unsuccessful and produced insufficient data for robust analyses. The researcher then decided to use manual administration of the hard copy survey. Data collection timeslots were arranged with specific gatekeepers (lecturers and programme managers), for manual administration of the scales to captive samples. This strategy was highly successful, as the researcher was able to collect more data than was achieved through electronic means. During manual administration of the hard copy survey, the researcher introduced the study to the groups and

waited for the respondents to complete the surveys before leaving. Participants were free to ask questions, they were informed that the study was longitudinal in nature and that they were required to sign the consent form to indicate their willingness to freely participate in the study. During mid-2020, electronic Qualtrics links for the Phase Two study were administered via gatekeepers, as opposed to manual administration by the researcher. This approach was necessitated by the national lockdown precipitated by the global Covid-19 pandemic, which interrupted the efficient data gathering process. Beal, one of the authors of Wang et al. (2017, p. 13), advises that multiple forms of participant contact information should be sought at the beginning of the study. However, this strategy was not employed in the current doctoral research due to the South African Protection of Personal Information Act, No. 4 of 2013, which protects the personal information of research participants. Thus, the researcher had to rely on the gatekeepers (programme managers and lecturers) to convey reminders to participants to complete the Phases One & Two surveys. Before electronically distributing the Phase Two survey links, the researcher cross-checked the Phase One survey email addresses provided by the students with the formal student email addresses provided by the gatekeepers at different institutions. This was done so that the researcher could proceed with remote data collection as a function of Covid-19 contact restriction requirements.

Wang et al. (2017) caution that legal changes may occur in the course of the duration of a longitudinal study. This proved to be true in the current doctoral study, owing to the national lockdown of academic institutions mandated by the South African government as a response to Covid-19. Accordingly, the researcher's manual data collection strategy was interrupted, forcing a return to the less successful electronic data collection strategy. In the current doctoral study, the researcher strove to avoid such panel attrition by strategically initiating the second phase of data collection before students completed their studies or left to participate in international electives as is usually the case for MBA candidates.

All groups were tested at Time 1 (Phase One study) and retested at Time 2 (Phase Two study). The salient difference between the groups was the programme type; one group in the business school fell into the 'Traditional Master's' category (MBA/MBL core courses) whilst the second group was in the Specialised Master's programme e.g., MM in Innovation Studies & MCom. Financial Management Sciences. A third group fell into the Governance category (Public Administration and Management). The researcher would be able to observe any changes in vocational behaviour amongst the groups from Time 1 to Time 2 test stage. A comparison of the Time 2 test results of the Traditional Master's, Specialised Master's and

Governance groups would give an indication of the impact of the 'environment' (academic programme) on observed vocational behaviour change. This procedure involved the quantitative data collection method.

Time 1 data (cross-sectional data) for the Phase One study was collected in the early months of 2019 and 2020 (approximately at the beginning of the academic year for all groups of the study). Time 2 data (longitudinal data) for the Phase Two study was collected approximately 5 to 6 months later for the target groups. The Phase Two study aimed to consolidate the two datasets (pre-and-post-test data).

Justification of Timing of Data Collection. De Cuyper et al. (2012) recommend a multiwave design in longitudinal research to accurately capture the developmental aspects of the process. The authors caution that "there is a lack of knowledge on adequate time lags across research domains" (De Cuyper et al., 2012, p. 163). Allen and Martin (2017) concur with Ployhart and Vandenberg (2010) on their definition of longitudinal research, which is denoted by repeated measurement of identical variables (units of observation) in a way that such units can be connected over time. The timing of data collection in the current study was strategically calculated to avoid participant attrition owing to the structure of the MBA programmes at the target business schools. A strategic choice was made to use MBA core courses (rather than the full MBA programme) as the treatment, because MBA students might have chosen to take their electives abroad towards the end of their academic programme. Therefore, the potential for attrition would have significantly increased after the end of the students' core courses. Accordingly, the researcher collected Time 1 data for all groups of the study early, at the start of the 2019 and 2020 academic year, and Time 2 data 5 to 6 months later for all groups of the study.

3.6 Data Analyses

The dependent and independent variables were quantifiable. Hence a primary quantitative method was used to analyse the data.The acquired data were captured, cleaned, coded, scored and analysed using the SPSS programme.

3.6.1 Phase One. This phase entailed a cross-sectional study design involving post-graduate management students in various programmes (MBA/MBL, Specialised Master's and the sample from the School of Governance). Data from all the subgroups of the study were collected at one time point, over a short period. The aforementioned instruments of vocational behaviour were used to collect the data. Participants' vocational behaviour was the variable of

interest. Participants were measured to determine whether their choice of academic environment (IV) is associated with their vocational behaviour (DV). A cross-sectional data analysis was completed. This involved testing P-E fit (congruence) as an antecedent of vocational behaviour. The SPSS programme was used to analyse the data.

3.6.2 Phase Two. This phase entailed a longitudinal (repeated measures) study design wherein the particular groups who were initially measured on instruments of vocational behaviour were again measured after a time lapse of 5 to 6 months (repeated treatment design). This included the students in the business schools and universities (MBA/MBL and Specialised Master's as well as the sample from the School of Governance). The purpose was to evaluate the independent variable (management education) in relation to the dependent variable (vocational behaviour change), whilst observing the hypothesised moderating effect of P-E fit (congruence). A longitudinal data analysis was completed. This involved testing the moderating effect of P-E fit (congruence) on the hypothesised relationship between academic environment (management programmes) and vocational behaviour change.

3.7 Congruence (P-E Fit)

Holland's (1985) theory proposes congruence as a predictor of behaviour. Congruence is based on top interest letters of the individual's interest type and the type of environment activities in the context of RIASEC Typology. Individual and environmental RIASEC profiles are matched to indicate congruence between the person and environment. In the current study congruence was determined using Discriminant Function Analysis (DA), the results of which are presented in Chapter 4.

3.7.1 Re-Statement of Research Aims.

- To obtain the RIASEC Types of individuals in different post-graduate management education programmes, according to Holland's Typology.
- To establish the dominant RIASEC type that reflects the 'academic environment code', within each post-graduate management education programme so that congruence (P-E fit) or lack thereof can be determined; and
- To examine the vocational behaviour of individuals in different post-graduate management education programmes.

The first research aim was addressed by computing the total score of each RIASEC Type for each respondent. The computed scores were then labelled and added to the dataset.

The second research aim was addressed using discriminant analysis. In this case, discriminant analysis enabled the prediction of the dominant S or E personality type based on the RIASEC scores generated in the previous stage. Before running the discriminant analysis, it was ensured that i) the cases were independent, ii) the predictors were not categorical and iii) there was no multicollinearity issue. These assumptions required attention prior to running the discriminant analysis (Hair et al., 2014). Results of DA are presented in Chapter 4.

3.7.2 Discriminant Function Analysis Procedure. The following steps were followed:

- *The Box's M test* was computed (Table 19). The results suggested that the assumption of equal covariance matrices should be rejected as the p value of the test was lower than 0.01. Therefore, discriminant analysis was run, assuming unequal covariances.
- Regarding *Eigenvalues*, a *canonical correlation coefficient* of 0.386 was observed (Table 20), meaning that the variance explained by the model was 14.8% (squared value of the canonical correlation coefficient).
- The *statistical validity of the discriminant function* was established via the *Wilks' Lambda Chi-square test* (Table 21). This test was significant ($p<0.05$), thereby confirming the validity of the discriminant function.
- According the Table 23, the discriminant equation is described as follows:
  D= 0.015 Investigative score -0.071 Realistic score -0.019 Artistic score -0.054 Social score +0.307 Enterprising score -0.075 Conventional score -3.249
- The effect of the RIASEC scores in predicting the E-Type or S-Type environment depended on the group centroids (Table 22). The mean discriminant score for the group of E-Type environment is positive (.361). The mean discriminant score for the S-Type environment is negative (-.481). This means that the higher the Enterprising-Type personality score, the more likely the person is to be in the Enterprising-Type environment. Alternatively, the higher the Social-Type personality score, the higher the chances of finding the person in the Social-Type environment. However, it must be noted that this is merely a probability assessment regarding group membership (belonging to one of the two groups), it does not assess actual belonging to the respective groups.
- Table 24 and Table 25 in Chapter 4 assess the performance of the discriminant model.

3.7.3 Moderating Effect of Congruence. In testing the moderating effect of congruence (P-E fit) the following procedure was followed:

- The sample's characteristics were summarised through frequency analysis via the SPSS programme.
- A repeated measures t-test within-subjects design was the basis for this study in order to test the effectiveness of the 'environment' on the sample's 'behaviour', i.e., to test the impact of the MBA/MBL core courses, Specialised Master's and Governance academic environment on the vocational behaviour change of its students. P-E fit was assessed per academic group as a moderator.
- All groups were pre-tested and post-tested; the scales for the study were administered to all groups on two occasions. The salient difference between the groups was that some fell into the 'Traditional Master's' category (MBA/MBL core courses) whilst the other groups (MM in Innovation Studies/ MCom. in Financial Management Sciences, Governance) did not.
- A comparison of the post-test results of the groups would give an indication of the impact of P-E fit (congruence). The researcher would be able to observe whether there were any significant changes in all or only some groups from the pre-test stage to the post-test stage.

3.7.4 Covariates. Everitt and Wykes (1999) define covariates as explanatory variables, more specifically as those which are not of primary interest in an investigation but are still measured as they are likely to impact the response variable. For instance, London (1983, as cited in Ballout, 2009) identified the explanatory use of situational factors such as 'job demands' and 'job resources' for highlighting differences in levels of career commitment. As such, covariates are included in analyses and model building. The following covariates were identified for this study: i) 'education' and 'job status' were useful explanatory variables for participants' levels of career commitment (Goulet & Singh, 2002); ii) 'age' was useful in accounting for differences in levels of career commitment (Popoola & Oluwole, 2007); and iii)) inclusion of the role of education, gender, intelligence and social status as control variables (Holland, 1985).

3.8 Research Ethics

The researcher was committed to abiding by the ethical guidelines for research psychologists as set out in the American Psychological Association's (APA's) Ethical Principles of Psychologists and Code of Conduct (Ethics Code) composed by Kerlinger and Lee (2000). The following are some of the relevant ethical issues of the study that were considered:

3.8.1 Institutional Approval. The University of Pretoria supervised the planning and conduct of the research in accordance with its guidelines on compliance with ethical standards. Adherence to the Ethical Principles and Code of Conduct provided by the University of Pretoria's Ethical Procedure was maintained. Institutional approval was sought from the target business schools, School of Governance and universities, to authorise the execution of the proposed research at the locations.

3.8.2 Informed Consent. Participation in the research was voluntary. The participants were informed of the purpose and objectives of the study. In this regard, participants of the study were given an information letter, in which they were informed that the study will be under the supervision of The Department of Human Resource Management of the University of Pretoria. Moreover, participants were informed that there would be no risks or benefits associated with participation, and that their participation was voluntary (they were at liberty to withdraw from the study at any time). The students who volunteered to participate were required to complete an informed consent form and were also assured that their survey responses would be kept confidential. Participant coersion was avoided. Participants were also informed of the nature and purpose of the study via an official written letter of consent, and signed the letter to confirm their participation in the current study (see Appendix A). Participants were notified that their anonymity would be upheld throughout the research process (thereby ensuring confidentiality of the information yielded) and that the data would be used exclusively for research purposes.

3.8.3 Provision of Information about Outcomes of the Research. This study culminates in a research thesis, to which interested parties will have access. On the provision of information regarding the research outcomes, it was envisaged that participants of the study would like to receive feedback on it. Accordingly, a copy of a summary of the results will be made available to the target business schools, school of governance and universities.

3.8.4 Reporting of Results. The results of the study were reported honestly and without deliberate distortion. The researcher was cognisant of the fact that data capturing and analysis would be challenging given the large volumes of information to be gathered. Therefore, the researcher aimed to report the results of the study honestly and without deliberate distortion. The researcher aimed to exercise trustworthiness by being as transparent as possible (without sabotaging the quality of data collected) about the purpose of the study and her identity as a student, and granting the participants of the study permission to verify her status.

3.8.5 Research Data. The data set will be preserved and stored by the author for future use. Researchers interested in specific aspects of the research, or who wish to verify the findings of the study or access the data set for further calculations, will have to approach the author and her supervisor in writing for permission to do so. Outside parties that are granted permission to access research material would be obliged to protect the confidentiality of research participants, personal data and ownership of the measuring instrument. Moreover, the data will be safely stored on a computer with access open only to the holders of the password i.e., the researcher and the research supervisor.

3.9 Chapter Summary

This chapter provided the research paradigm and the research design for the investigation and evaluation of management education. The research process, the operational definition of vocational behaviour, and a description of the sample, measuring instruments and data capturing process and data analyses used, were presented.

CHAPTER 4

RESEARCH RESULTS

The chapter provides the results of all data analyses with statistical details for Phase One and Phase Two of the study. Descriptive analyses are presented including central tendency measures of vocational behaviour indicators. Inferential statistical analysis is also indicated.

4.1 Phase One Results

The descriptive and inferential statistical analyses are reported below.

4.1.1 Descriptive Statistical Analysis. The data analysis entailed demographic information on participants' characteristics, including information on education, employment sector, job level, institutions attended and academic programmes. Central tendency measures (mean, median, and standard deviation) were used to conduct the descriptive analysis of the constructs of vocational behaviour indicators.

4.1.1.1 Demographic Information. The information on participants' characteristics and target institutions are presented below in Table 1 to Table 10 and Figure 7 to Figure 12.

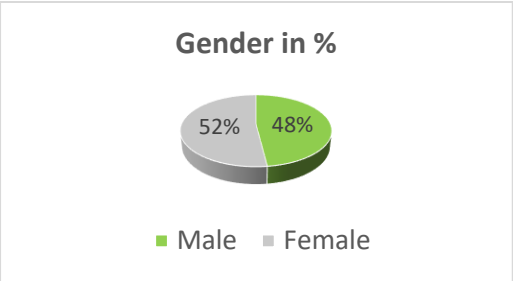
Table 1

Characteristics of Participants: Gender

Gender	Frequency	Percent
Male	170	48,0
Female	184	52,0
Total	354	100,0
Missing values	6	
Total	360	

Figure 7

Gender of Participants



The results in Table 1 above indicate that 52.0% of the study's participants were female, whilst men comprised 48.0% of the sample. Figure 7 illustrates this gender division of the participants.

Table 2

Characteristics of Participants: Age

Age:	*M*	*SD*
	27,60	13,388

The average age of the respondents was 28 years.

Table 3

Characteristics of Participants: Home Language

Language	Frequency	Percent
English	81	26,9
Afrikaans	19	6,3
IsiNdebele	3	1,0
IsiXhosa	23	7,6
IsiZulu	49	16,3
Sepedi	40	13,3
Sesotho	16	5,3
Setswana	36	12,0
SiSwati	10	3,3
Tshivenda	15	5,0
Xitsonga	9	3,0
Total	301	100,0
Missing values	59	
Total	360	

As indicated in Table 3, the three most spoken home languages were English (26.9%), Isizulu (16.3%) and Sepedi (13.3%). The three least spoken home languages were SiSwati (3.3%), Xitsonga (3.0%) and IsiNdebele (1.0%).

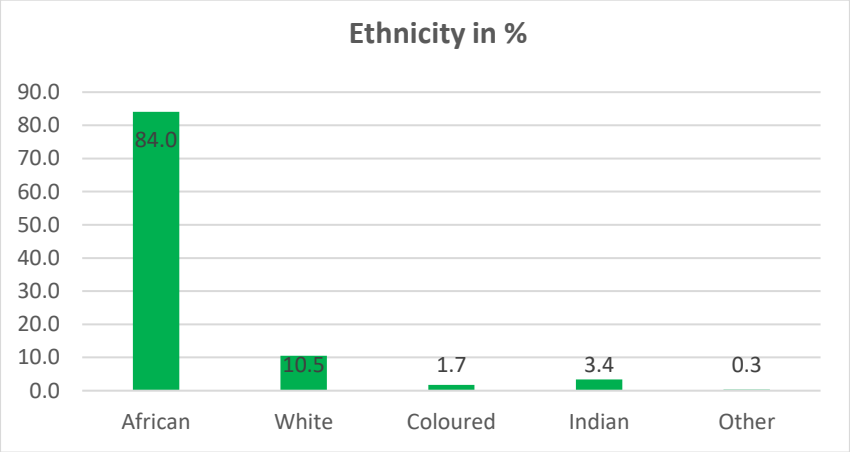
Table 4

Characteristics of Participants: Ethnicity

Ethnicity	Frequency	Percent
African	295	84,0
White	37	10,5
Coloured	6	1,7
Indian	12	3,4
Other	1	0,3
Total	351	100,0
Missing value	9	
Total	360	

Figure 8

Ethnicity of Participants



In Table 4, Africans (84.0%) comprised the majority of the sample, followed by Whites (10.5%), with Coloureds being marginally represented (1.7%). Of the respondents, 0,3 % reported being of an alternative ethnicity. This demographic spread is reflective of the South African population. It is illustrated in Figure 8.

Table 5

Characteristics of Participants: Education and Training

Education	Frequency	Percent
Matric / Grade 12	105	30,9
Diploma	15	4,4
Bachelor's Degree	55	16,2
Honour's Degree	134	39,4
Master's Degree	31	9,1
Total	340	100,0
Missing value	20	
Total	360	

The results in Table 5 indicate that the highest number of respondents (39.4%) held an Honour's Degree. The lowest qualification was a Matric/Grade 12, held by 30.9% of the respondents. The highest qualification (Master's Degree) was held by 9.1% of the participants.

Table 6

Characteristics of Participants: Academic Institution

Academic Institution	Frequency	Percent
University 1 (Business School)	18	4,9
University 2 (Governance)	21	5,7
University 3 (Business School)	54	14,6
University 1 (Governance)	99	26,8
University 4 (Business School)	93	25,1
University 4 (Governance)	85	23,0
Total	370	100,0

Table 6 illustrates that the majority of the participants came from University 1 (Governance) and the smallest number of participants were from University 1 (Business School).

Table 7

Characteristics of Participants: Academic Programmes

Academic programmes	Frequency	Percent
MBA/MBL	142	38,4
Specialised Master's (Governance)	146	39,5
Specialised Master's (Management)	82	22,2
Total	370	100,0

Table 7 shows that 39.5% of the respondents belonged to the Specialised Master's group in Governance; a comparable number (38.4%) of the participants belonged to the MBA/MBL group. The smallest number of respondents (22.2%) were drawn from the Specialised Master's group in the Business Sector. Figure 9 illustrates the findings.

Figure 9

Academic Programmes

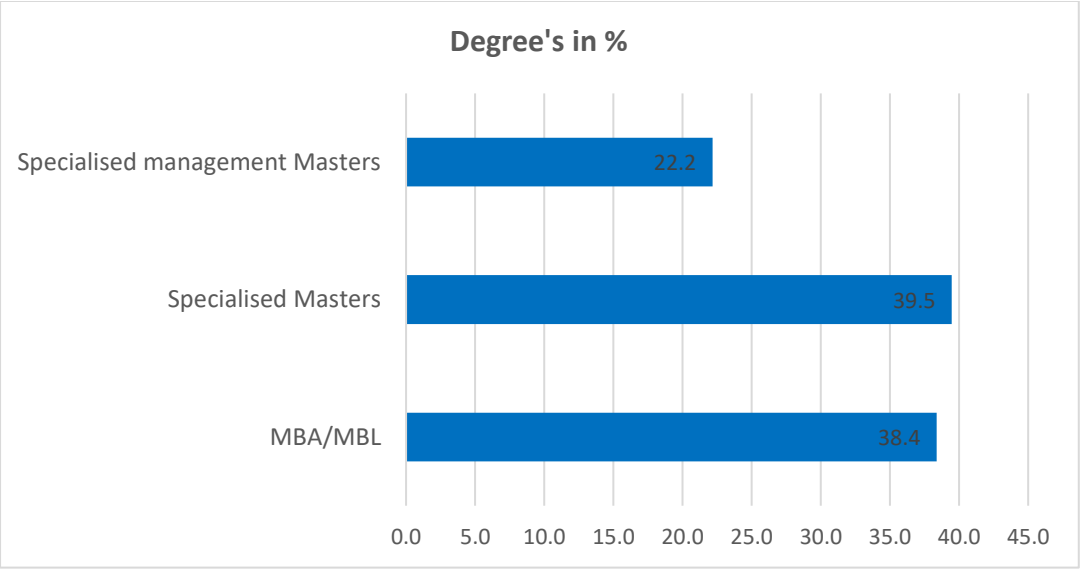


Table 8

Characteristics of Participants: Employment Sector

Employment Sector	Frequency	Percent
Accountancy, Banking & Finance	58	17,7
Business, Consulting & Management	55	16,8
Engineering & Manufacturing	41	12,5
Energy	11	3,4
Environment & Agriculture	10	3,0
Healthcare	17	5,2
Hospitality & Events Management	8	2,4
Information Technology	22	6,7
Marketing, Advertising & PR	25	7,6
Science & Pharmaceuticals	6	1,8
Transport & Logistics	11	3,4
Recruitment & HR	16	4,9
Leisure, Sport & Tourism	4	1,2
Creative Arts & Design	2	0,6
Public Service	24	7,3
Legal	2	0,6
Education	9	2,7
Government	7	2,1
Total	328	100,0
Missing value	32	
Total	360	

Table 8 shows that the highest number of respondents were or had been employed in Accountancy, Banking & Finance (17.7%) and in the Business, Consulting & Management sector (16.8%). Engineering & Manufacturing (12.5%), Marketing, Advertising & PR (7.6%) and the Public Service (7.3%) were also popular amongst the target sample of the study. Figure 10 illustrates the employment sector demographic detailed in Table 8.

Figure 10

Employment Sector

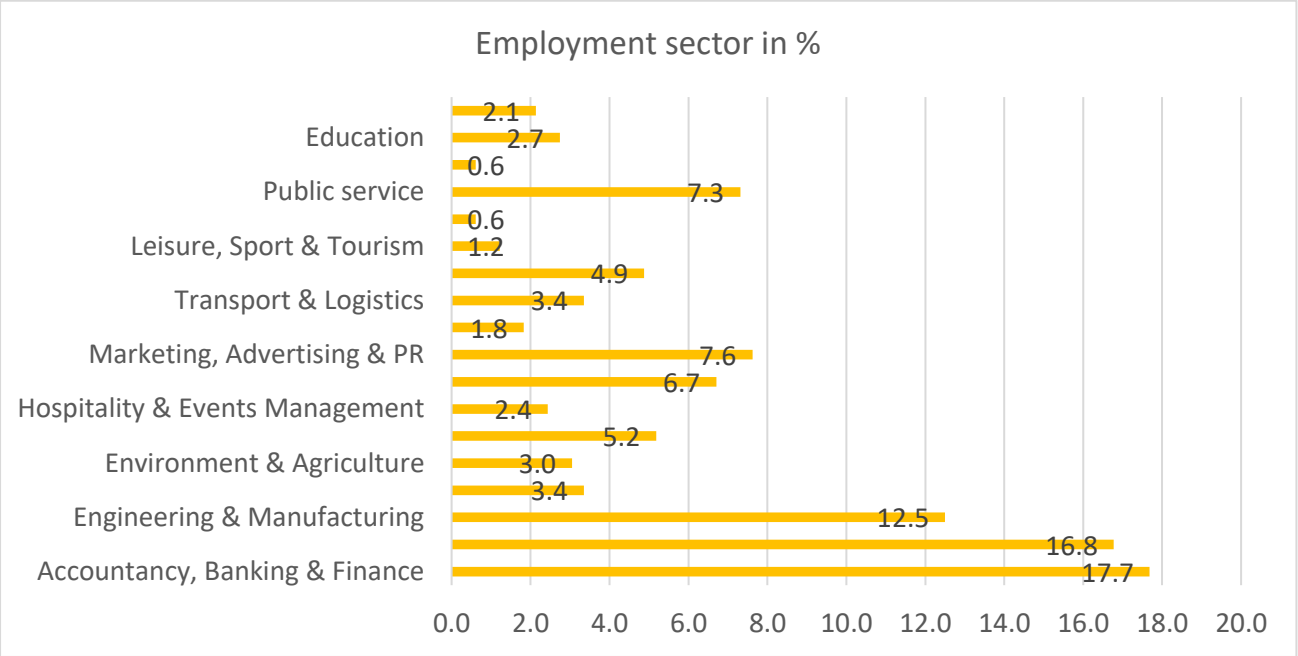


Table 9

Characteristics of Participants: Employment Level

Employment Level	Frequency	Percent
Junior management	103	31,4
Middle management	144	43,9
Senior management	56	17,1
C-Suite	8	2,4
Partner	9	2,7
Other	8	2,4
Total	328	100,0
Missing value	32	
Total	360	

As shown by the figures above, the majority of participants (43.9%) reported their job level/status as Middle management, followed by Junior management (31.4%) and then Senior

management (17.1%). The C-Suite category was endorsed by a mere 2.4% of respondents. Figure 11 below illustrates the picture.

Figure 11

Employment Level

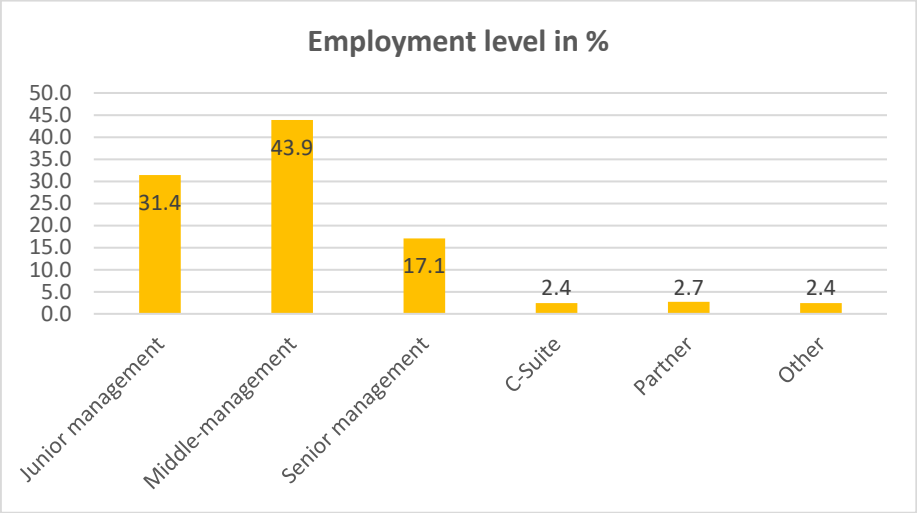


Table 10

Characteristics of Participants: Years of Work Experience

Years of Work Experience	Frequency	Percent
0-5 years	69	19,6
5-10 years	108	30,7
11-20 years	135	38,4
21-30 years	30	8,5
31-40 years	9	2,6
41 years and above	1	0,3
Total	352	100,0
Missing value	8	
Total	360	

In Table 10 most respondents (38.4%) reported having 11-20 years of work experience, followed by 30.7% of the respondents who reported having 5-10 years of work experience. A minority of respondents (2.6%) indicated a work experience period of 31-40 years, with even fewer respondents (0.3%) reporting work experience of more than 40 years. Figure 12 below illustrates the content of Table 10.

Figure 12

Work Experience

4.1.1.2 Central Tendency Measures. Central tendency measures (mean, median, and standard deviation) were used to conduct the descriptive analysis of the following constructs: Vocational interest/personality (Realistic, Investigative, Artistic, Social, Enterprising, Conventional), career decision-making self-efficacy, career commitment, vocational identity and work identity. The scores on these constructs were obtained using different scales designed to measure the constructs.

4.1.1.3 Vocational Interest/Personality Measurement. The six constructs of Realistic, Investigative, Artistic, Social, Enterprising, and Conventional were measured on a five-point Likert scale, where the value of 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree, 5= Strongly agree. Based on the principle that 2.5 (5/2) is the middle point of the five-point Likert scale, any mean score below 2.5 indicates that most respondents tend to disagree with the statement. Mean scores between 2.5 and 3.4 suggest that most respondents tend to neither agree nor disagree with the statement of the construct. All the mean scores equal to or above 3.5 indicate that most respondents tend to agree with the statements of the construct.

The following results on vocational interest/personality measurement were obtained:

Table 11

Participants' RIASEC Interests/Personality Scores

Vocational Interest/Personality	*M*	*Mdn*	*SD*
Realistic	1,85	1,60	0,99
Investigative	2,19	2,00	1,00
Artistic	2,80	2,80	1,08
Social	3,39	3,60	1,02
Enterprising	3,86	4,00	0,79
Conventional	2,69	2,60	0,99

According to the above results, the majority of respondents tended to strongly disagree with the statements of Realistic activities (*M* = 1.85), disagree with Investigative activities (*M* = 2.19), and neither agreed nor disagreed with statements measuring Artistic activities (*M* = 2.80). They neither agreed nor disagreed with the statements measuring Social activities (*M* = 3.39) and Conventional activities (*M* = 2.69). However, they tended to agree with the statements of Enterprising activities (*M* = 3.86), indicating that most respondents endorse, prefer and identify with Enterprising Type career interests. The Enterprising personality type is characteristically popular, persuasive and self-confident, possesses leadership ability, and values political and economic achievement (Holland, 1985).

4.1.1.4 Measurement of Vocational Behaviour Indicators. The scores on the constructs of vocational behaviour indicators, viz., career decision-making self-efficacy, career commitment, vocational identity and work identity, were obtained using the relevant scales that measure these constructs. Central tendency measures (mean, median, and standard deviation) of the indicators are outlined below.

Table 12

Indicators of Vocational Behaviour

Vocational behaviour indicators	*M*	*Mdn*	*SD*
Career decision-making self-efficacy	4,04	4,04	0,54
Career commitment	3,48	3,43	0,74
Work identity	4,92	4,94	0,83

Career Decision-Making Self-Efficacy. A five-point Likert scale was used to assess responses on the construct. The mean score of 4.04 suggests that the majority of respondents had much confidence in their ability to successfully complete tasks which are vital to the career decision-making process (Betz, 2000).

Career Commitment. A five-point Likert scale was used to assess responses on the construct. The mean score of 3.48 suggests that most respondents tended to neither agree nor disagree with choices regarding their career commitment. This result indicates ambivalence regarding the respondents' willingness to maintain membership in their respective occupations. According to Blau (1988), an indication of a person's career motivation can be inferred from the measurement of that individual's career commitment. Following this line of thought, most respondents' levels of motivation to work in their chosen careers may be described as moderate.

Work Identity. A seven-point Likert scale was used to measure responses on the work identity construct. The overall mean score of 4.92 suggests that most respondents have a notable "work-based self-concept", which informs their job performance and the manner in which they conduct their careers (Walsh & Gordon, 2008).

Vocational Identity is a categorical variable for which measures of central tendency were not calculated. Results regarding this construct are reported below in Table 13.

4.1.1.5 Distribution of Levels of Vocational Identity, Occupational Information and Occupational Barriers among the Research Participants. The following results were obtained:

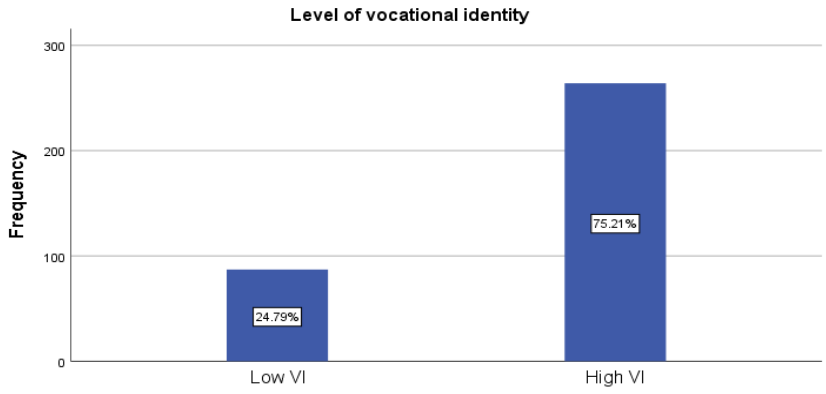
Table 13

Participants' Vocational Identity

Level	Frequency	Percent
Low	87	24,8
High	264	75,2
Total	351	100,0
Missing value	9	
Total	360	

Figure 13

Level of Vocational Identity



According to the results in Table 13, the majority (75.2%) of the respondents had a high level of vocational identity. Figure 13 illustrates the participants' level of vocational identity.

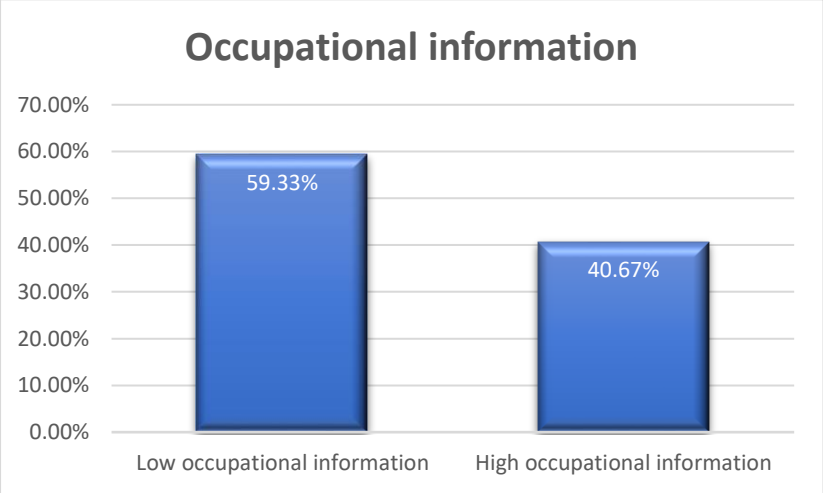
Table 14

Participants' Need for Occupational Information

Level	Frequency	Percent
Low occupational information	213	59,3
High occupational information	146	40,7
Total	359	100,0
Missing values	1	
Total	360	

Figure 14

Level of Occupational Information



The Occupational Information Scale measures the individual's need for vocational information (Holland et al., 1980). The results in Table 14 indicate that the majority (59.3%) of the respondents did not possess much occupational information, meaning that they required more information regarding employment opportunities and ways to find employment in their preferred careers, as well as ways of obtaining the requisite training in their preferred career. They tend to choose different occupations. On the other hand, 40.7% of the respondents possessed high levels of occupational information, indicating no need for such further information. Figure 14 illustrates the participants' levels of occupational information.

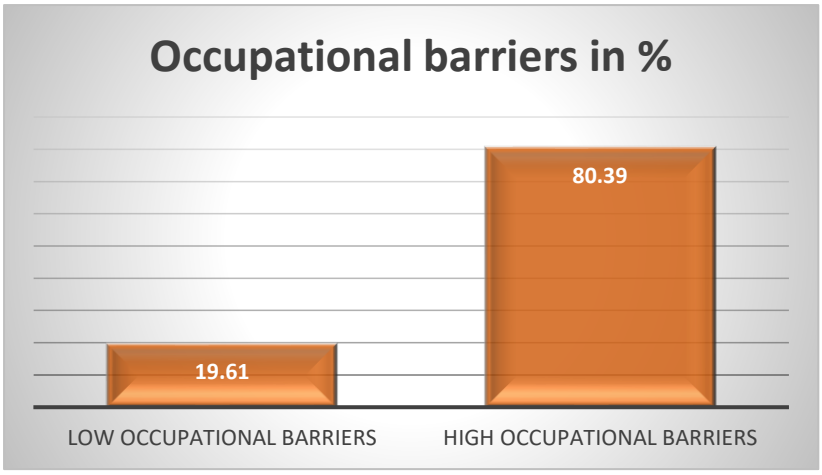
Table 15

Participants' Occupational Barriers

Level	Frequency	Percent
Low occupational barriers	70	19,6
High occupational barriers	287	80,4
Total	357	100,0
Missing values	3	
Total	360	

Figure 15

Level of Occupational Barriers



According to the results in Table 15, a high score on the Occupational Barriers Scale was obtained by the majority (80.4%) of the respondents. This signified the absence of perceived vocational barriers e.g., participants' uncertainty regarding their ability to complete the requisite education and training towards their career preferences, participants' self-perceived inadequacy (lack of talent) regarding the pursuit of their first career choice, and an influential person in the respondents' lives who may not approve of their vocational choice.

4.1.1.6 Personality and Academic Environments. For the purpose of this study two personality types were identified, viz., the Enterprising personality type (E-type personality) and the Social personality type (S-type personality). Academic environments of interest in the study were designated as 'Enterprising type' (E-type environment) and 'Social type' (S-type environment). **Note:** although results pertaining to other vocational interest types (RIASEC scores) are mentioned in this chapter, the focus of this study was the Enterprising and Social

vocational interest types. Results pertaining to the other RIASEC types were reported for the sole purpose of presenting a balanced and holistic view of Holland's typology/theory of vocational choice in the context of the current doctoral study.

4.1.1.6.1 Academic Environments. Table 16 and Figure 16 below present the results pertaining to the Enterprising and Social vocational interest types.

Table 16

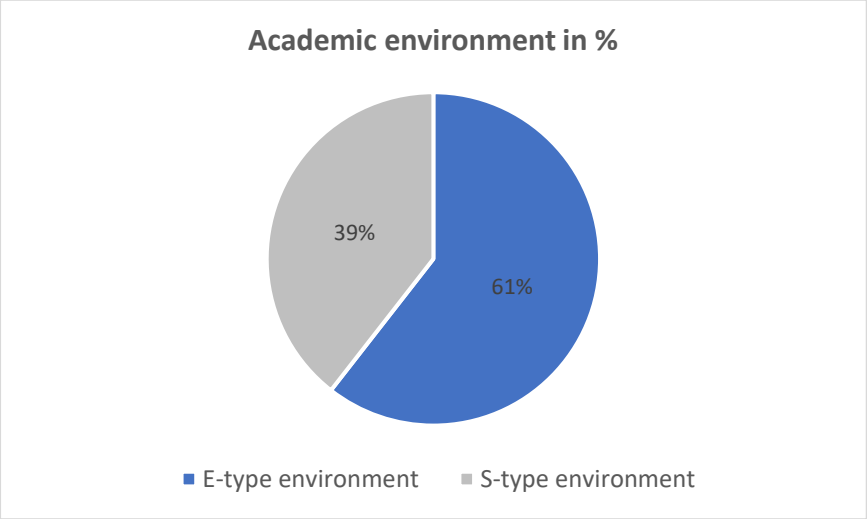
Participants' Academic Environment Choice

Academic environment	Frequency	Percent
E-type environment	224	60,5
S-type environment	146	39,5
Total	370	100,0

The majority of respondents (61%) chose academic programmes classified in the E-type environment whilst 39% of the respondents targeted academic programmes classified in the S-type environment.

Figure 16

Academic Environment



4.1.1.6.2 Predicted Personality Group. Table 17 and Figure 17 below present the results pertaining to the predicted personality groups of the study.

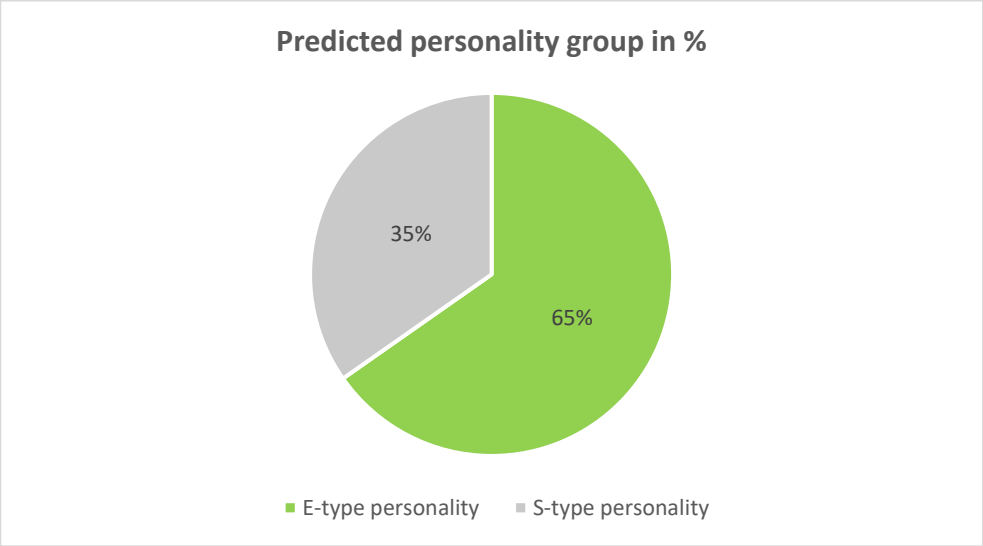
Table 17

Participants' Predicted Vocational Personality Group

Personality type	Frequency	Percent
E-type personality	235	65,3
S-type personality	125	34,7
Total	360	100,0

Figure 17

Predicted Personality Group



In Table 17 the predicted personality group for the majority (65.3%) of respondents was the E-type personality. That is, most respondents' vocational personality could be categorised as the Enterprising type. There were fewer respondents with a Social type vocational personality (34.7%).

4.1.1.6.3 P-E Fit. The participants' congruence (P-E fit) with their academic environment is presented below in Table 18 and Figure 18.

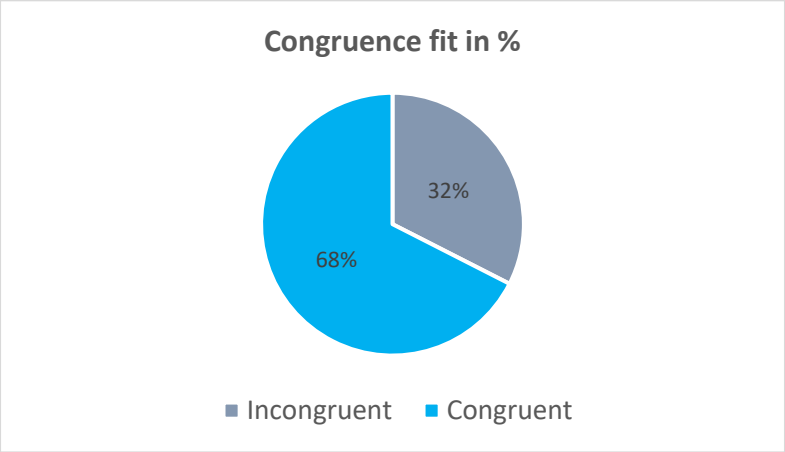
Table 18

Participants' Congruence (P-E Fit) with their Academic Environment

P-E fit	Frequency	Percent
Incongruent	117	32,5
Congruent	243	67,5
Total	360	100,0

Figure 18

Congruence (P-E Fit)



The results in Table 18 and Figure 18 indicate that 67.5% of the respondents were congruent with their academic environment, whereas the minority of respondents (32.5%) were not, i.e., 67.5% of the respondents had personality types which were congruent with their chosen academic environments, whereas 32.5% of respondents had personality types which were incongruent with their chosen academic environment.

4.1.2 Inferential Statistical Analyses. Inferential statistical analyses were performed to address the research aims and test the hypotheses of the study regarding personality and academic environment**.** The following hypotheses were tested:

- H1a: Enterprising personality type ('E-type') is associated with Enterprising academic environment ('E-type academic environment code'), viz., MBA/MBL, Specialised Business Master's. This involved Business Management students.

- H1b: Social personality type ('S-type') is associated with Social academic environment ('S-type academic environment code') viz., Governance programme (Public Administration and Management). This involved Governance students.

Discriminant Function Analysis and Chi-square test of independence were employed to test these hypotheses.

4.1.2.1 Dominant RIASEC Personality Type and Academic Environment Code. The inferential statistical analyses yielded the following outcomes:

Discriminant Function Analysis (DA) was used to operationalise congruence (i.e., predict academic environment "group membership" based on participants' RIASEC person scores). The results of DA are presented in Table 19 below.

Table 19

Box's M Test

Test Results		
Box's M		40.015
F	Approx.	1.870
	df1	21
	df2	393316.612
	Sig.	.009

Tests null hypothesis of equal population covariance matrices.

In Table 19 the Box's M test results suggest that the assumption of equal covariance matrices should be rejected as the *p* value of the test is lower than .01. Therefore, discriminant analysis is run assuming unequal covariances.

Table 20

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.175[a]	100.0	100.0	.386

a. First 1 canonical discriminant functions were used in the analysis.

Table 20 indicates a canonical correlation coefficient of 0.386, meaning that the variance explained by the model is 14.8% (squared value of the canonical correlation coefficient).

Table 21

Wilks' Lambda Chi-Square Test

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.851	56.675	6	.000

The Wilks' Lambda Chi-square test is significant ($p < 0.05$), meaning that the discriminant function is statistically valid.

Table 22

Function Coefficient - Functions at Group Centroids

Academic Environment code	Function 1
E-type environment	.361
S-type environment	-.481

Unstandardized canonical discriminant functions evaluated at group means

The effect of the RIASEC scores in predicting the Enterprising or Social environment depends on the group centroids (Table 22). The mean discriminant score for the group “E-type environment” is positive (.361). The mean discriminant score for the S-type environment is negative (-.481). This means, for example, that the higher the Enterprising personality score, the more likely the person is to be found in the Enterprising environment. Conversely, the higher the Social personality score, the higher the chances that the individual would be found

in the Social environment. **Note** that this is merely a probability assessment of group membership (belonging to one of the two groups), it is not an assessment of actual group membership/belonging to the group**.**

Table 23

Canonical Discriminant Function Coefficients

	Function 1
Realistic	-.071
Investigative	.015
Artistic	-.019
Social	-.054
Enterprising	.307
Conventional	-.075
(Constant)	-3.249

Unstandardized coefficients

According to Table 23, the discriminant equation is described as follows:

D= -0.071 Realistic score 0.015 Investigative score -0.019 Artistic score -0.054 Social score +0.307 Enterprising score -0.075 Conventional score -3.249

Table 24 and Table 25 reflect the assessment of the performance of the discriminant model.

Table 24

Prior Probabilities for Groups

Academic Environment code	Prior	Cases Used in Analysis	
		Unweighted	Weighted
E-type environment	.571	204	204.000
S-type environment	.429	153	153.000
Total	1.000	357	357.000

According to Table 24 above, there is a 57.1% chance that a respondent picked at random belongs to the E-type environment and only a 42.9% chance that they belong to the S-type environment. According to Hair et al. (2014), a discriminant model with high sensitivity

and high specificity should have predictive probability of 25% greater than the random probabilities presented in Table 24. So, any classification value above 71.3% (0.571x 1.25) suggests an acceptable level of congruence for the E-type environment while a minimum of 53.6 % (0.429x 1.2) is required to validate the prediction of the S-type environment.

Table 25

Classification Results[a]

Academic Environment code			Predicted Group Membership		
			E-type environment	S-type environment	Total
Original	Count	E-type environment	162	44	206
		S-type environment	73	81	154
	%	E-type environment	78.6	21.4	100.0
		S-type environment	47.4	52.6	100.0

a. 67,5% of original grouped cases correctly classified.

According to the results in Table 25, congruence (P-E fit) was established for the E-type group, as 78.6% is above the 71.3% required cut-off point. However, congruence (P-E fit) of the S-type group was not established, as 52.6% is lower than the 53.6% required cut-off point. The incongruence observed in the S-type group stems from the fact that a significant percentage (47.4%) of respondents with the S-type personality were found in the E-type environment.

Table 26

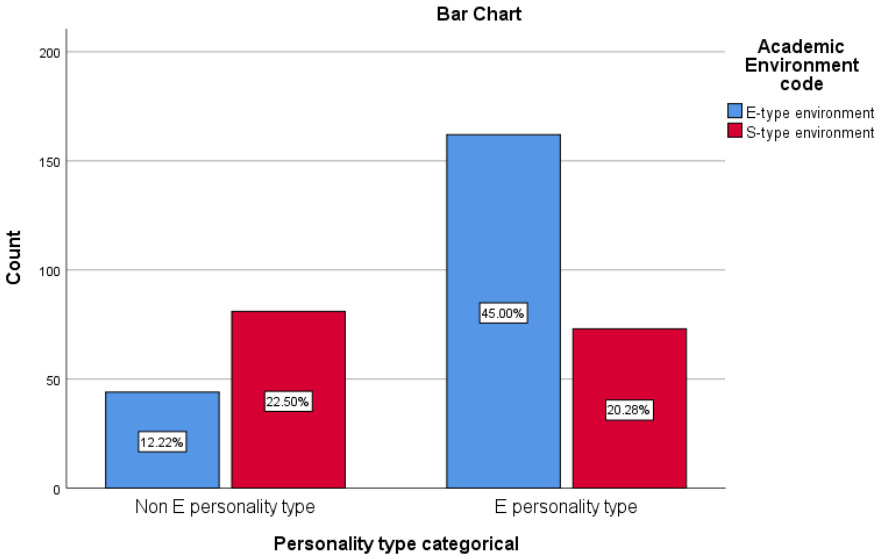
Standardized Canonical Discriminant Function Coefficients

	Function 1
Realistic	-.348
Investigative	.077
Artistic	-.102
Social	-.275
Enterprising	1.143
Conventional	-.372

The results in Table 26 above revealed that the Enterprising personality type was the best predictor of both the Enterprising type and Social type environments in South Africa, as it had the highest coefficient (1.143) in the discriminant function. Figure 19 illustrates this finding.

Figure 19

Personality Type and Academic Environment



Conclusion: The congruence (P-E fit) theory according to Holland (1985) was found to be valid for the Enterprising group i.e., respondents with the Enterprising personality type. However, the theory was not established for the Social group, as a substantial number of the Social group (respondents with the Social personality type) were found in the Enterprising type environment. This finding is discussed in Chapter 5.

4.1.2.2 Predicted Personality Type and Chosen Degree Programme. A test of independence was performed to examine the relation between the predicted personality group of respondents (E-type personality or S-type personality) and the degree group code (MBA/MBL; Specialised Business Management Master's; Governance Master's) in which these predicted personality types were found.

The inferential statistical analyses yielded the following outcomes:

Table 27

*Crosstabulation: RIASEC Personality Type * Degree Group Code*

			Degree Group code			
			MBA/MBL	Governance Master's	Specialised Business Management Master's	Total
Predicted personality Group	E-type personality	Count	104_a	73_b	58_a	235
		% within Degree Group code	79.4%	47.4%	77.3%	65.3%
	S-type personality	Count	27_a	81_b	17_a	125
		% within Degree Group code	20.6%	52.6%	22.7%	34.7%
Total		Count	131	154	75	360
		% within Degree Group code	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Degree Group code categories whose column proportions do not differ significantly from each other at the .05 level.

Frequency data from the crosstabulation in Table 27 above were analysed with the Chi-square statistic in Table 28, to evaluate whether the categorical variables were associated. Results of the analyses are reported in Table 28.

Table 28

Chi-Square Test of Independence

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	38.028[a]	2	.000
Likelihood Ratio	38.262	2	.000
Linear-by-Linear Association	1.989	1	.158
N of Valid Cases	360		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 26.04.

According to Table 28 above, a chi-square test of independence yielded the following result: the relation between the personality type and academic programme (degree group code) variables was significant, X^2 (2, N = 360) = 38.03, p = .000. Students with the predicted E-type personality were most likely to be found in the MBA/MBL and Specialised Business Management programmes. On the other hand, students with the predicted S-type personality would probably be studying in the Governance academic programmes. Put differently, the E-type personality was associated with the E-type academic environment and the S-type personality was associated with the S-type academic environment.

Conclusion: A positive association was found between students' predicted personality type and their chosen academic programme (environment type). The results of the Discriminant Function Analysis and Chi-square test of independence supported Hypothesis 1a and Hypothesis 1b.

4.1.3 Within Group Differences: Vocational Behaviour Indicators. Firstly, the mean scores on vocational behaviour indicators for Governance students and Business Management students were obtained and are presented below. Secondly, *t*-tests for independent groups were conducted to establish whether there were differences in vocational behaviour between congruent and incongruent Business Management students (MBA/MBL & Specialised Business Master's) and between congruent and incongruent Governance Master's students**.** The results are reported below.

Note: Appendices B and C contain comprehensive tables of results.

4.1.3.1 Business Management Students. The personality/interest scores for the Business Management students were obtained and analysed. The significant results are reported in the tables below.

Table 29

Within Group Differences in Realistic Interest/Personality Scores of Business Management Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Realistic	Incongruent	44	2.1545	1.03597
	Congruent	162	1.6247	.84464

T-test

Levene's test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Realistic	Equal variances not assumed	6.943	0.009	3.122	59.411	0.003

Incongruent students had higher Realistic interest/personality scores (M = 2.15, SD = 1.03) than congruent students (M = 1.62, SD = .84), t (59.411) = 3.12, p = .003. The difference in Realistic interest/personality scores between congruent and incongruent Business Management students was statistically significant.

Table 30

Within Group Differences in Enterprising Interest/Personality Scores of Business Management Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Enterprising	Incongruent	44	3.3727	.69495
	Congruent	162	4.2543	.48173

Table 30 (continued)

T-test

Levene's test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Enterprising	Equal variances not assumed	3.963	0.048	-7.914	54.707	0.000

Congruent students had higher Enterprising interest/personality scores (M = 4.25, SD = .48) than incongruent students (M = 3.37 SD = .69), t (54.707) = -7.91, p = .000. The difference in Enterprising interest/personality scores between congruent and incongruent Business Management students was statistically significant.

Table 31

Within Group Differences in Conventional Interest/Personality Scores of Business Management Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Conventional	Incongruent	42	2.9381	1.02979
	Congruent	162	2.5790	.90069

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Conventional	Equal variances assumed	0.899	0.344	2.234	202	0.027

Incongruent students had higher Conventional interest/personality scores (M = 2.93, SD = 1.02) than congruent students (M = 2.57, SD = .90), t (202) = 2.23, p = .027. The difference in Conventional interest/personality scores between congruent and incongruent Business Management students was statistically significant.

The insignificant findings on vocational behaviour indicators for the Business Management students are reported in the tables below:

Table 32

Within Group Differences in Career Decision-Making Self-Efficacy of Business Management Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Career Decision-Making Self-Efficacy	Incongruent	43	4.0558	.51189
	Congruent	160	4.1547	.53340

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Career Decision-Making Self-Efficacy	Equal variances assumed	1.483	0.225	-1.089	201	0.278

In Table 32, congruent students had higher levels of career decision-making self-efficacy (M = 4.15, SD = .53) than incongruent students (M = 4.05, SD = .51). The t-test results were statistically non-significant, t (201) = -1.08, p = .278. The difference in career decision-making self-efficacy levels between congruent and incongruent Business Management students was not statistically significant (p > 0.05).

Table 33

Within Group Differences in Career Commitment of Business Management Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Career Commitment	Incongruent	44	3.4058	.71325
	Congruent	162	3.3907	.79225

Table 33 (continued)

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Career Commitment	Equal variances assumed	0.760	0.384	0.115	204	0.908

Incongruent students had higher levels of career commitment (*M* = 3.40, *SD* = .71) than congruent students (*M* = 3.39, *SD* = .79). The *t*-test results were statistically non-significant, *t* (204) = .11, *p* = .908. The difference in career commitment level between congruent and incongruent Business Management students was not statistically significant.

Table 34

Within Group Differences in Work Identity of Business Management Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Work Identity	Incongruent	42	4.9015	.76763
	Congruent	146	4.7936	.77477

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Work Identity	Equal variances assumed	0.055	0.816	0.797	186	0.427

In Table 34 incongruent students had higher levels of work identity (*M* = 4.90, *SD* = .76) than congruent students (*M* = 4.79, *SD* = .77). The *t*-test results were statistically non-significant, *t* (186) = .79, *p* = .427. The difference in work identity levels between congruent and incongruent Business Management students was not statistically significant.

Table 35

Within Group Differences in Vocational Identity of Business Management Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Vocational Identity	Incongruent	41	30.9024	3.81972
	Congruent	158	30.0063	3.99282

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Vocational Identity	Equal variances assumed	0.157	0.693	1.292	197	0.198

In Table 35 incongruent students had higher levels of vocational identity (M = 30.90, SD = 3.81) than congruent students (M = 30.00, SD = 3.99). The t-test results were statistically non-significant, t (197) = 1.29, p = .198. The difference in vocational identity levels between congruent and incongruent Business Management students was not statistically significant.

Below in Table 36 it is shown that incongruent students had higher Investigative interest/personality scores (M = 2.25, SD = 1.05) than congruent students (M = 2.15, SD = .95). The t-test results were statistically non-significant, t (204) = .58, p = .562. The difference in Investigative interest/personality scores between congruent and incongruent Business Management students was not statistically significant.

Table 36

Within Group Differences in Investigative Interest/Personality Scores of Business Management Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Investigative	Incongruent	44	2.2500	1.05841
	Congruent	162	2.1531	.95840

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Investigative	Equal variances assumed	1.958	0.163	0.582	204	0.562

Table 37

Within Group Differences in Artistic Interest/Personality Scores of Business Management Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Artistic	Incongruent	44	2.6864	1.04894
	Congruent	162	2.8630	1.08324

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Artistic	Equal variances assumed	0.044	0.835	-0.965	204	0.336

In Table 37 congruent students had higher Artistic interest/ personality scores (*M* = 2.86, *SD* = 1.08) than incongruent students (*M* = 2.68, *SD* = 1.04). The *t*-test results were statistically non-significant, *t* (204) = -.96, *p* = .336. The difference in Artistic interest/personality scores between congruent and incongruent Business Management students was not statistically significant.

Table 38

Within Group Differences in Social Interest/Personality Scores of Business Management Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Social	Incongruent	44	3.3636	1.04349
	Congruent	162	3.4556	.95025

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Social	Equal variances assumed	0.357	0.551	-0.557	204	0.578

In Table 38 congruent students had higher Social interest/personality scores (*M* = 3.45, *SD* = .95) than incongruent students (*M* = 3.36, *SD* = 1.04). The *t*-test results were statistically non-significant, *t* (204) = -.55, *p* = .578. The difference in Social interest/personality scores between congruent and incongruent Business Management students was not statistically significant.

4.1.3.2 Governance Students. The mean scores in vocational behaviour indicators for Governance students were obtained. The significant *t*-test results are reported in the tables below.

Table 39

Within Group Differences in Career Decision-Making Self-efficacy of Governance Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Career Decision-Making Self-Efficacy	Incongruent	73	4.0225	.47272
	Congruent	81	3.8005	.55877

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Career Decision-Making Self-Efficacy	Equal variances assumed	1.247	0.266	2.646	152	0.009

Table 39 shows that incongruent students had higher levels of career decision-making self-efficacy (M = 4.02, SD = .47) than congruent students (M = 3.80, SD = .55), t (152) = 2.64, p = .009. The difference in career decision-making self-efficacy scores between congruent and incongruent Governance students was statistically significant.

Below in Table 40 it is seen that congruent students had higher Realistic interest/personality scores (M = 2.27, SD = 1.17) than incongruent students (M = 1.67, SD = .82), t (152) = -3.62, p = .000. The difference in Realistic interest/personality scores between congruent and incongruent Governance students was statistically significant.

Table 40

Within Group Differences in Realistic Interest/Personality Scores of Governance Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Realistic	Incongruent	73	1.6740	.82698
	Congruent	81	2.2741	1.17875

Table 40 (continued)

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Realistic	Equal variances assumed	10.132	0.002	-3.620	152	0.000

Table 41

Within Group Differences in Enterprising Interest/Personality Scores of Governance Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Enterprising	Incongruent	73	4.1342	.57257
	Congruent	81	3.1062	.81553

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Enterprising	Equal variances assumed	3.599	0.060	8.961	152	0.000

In Table 41 incongruent students had higher Enterprising interest/personality scores (M = 4.13, SD = .57) than congruent students (M = 3.10, SD = .81), t (152) = 8.96, p = .000. The difference in Enterprising interest/personality scores between congruent and incongruent Governance students was statistically significant.

The insignificant findings on Governance students are reported in the tables below.

Table 42

Within Group Differences in Career Commitment of Governance Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Career Commitment	Incongruent	73	3.6967	.61765
	Congruent	81	3.4921	.73783

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Career Commitment	Equal variances assumed	1.964	0.163	1.855	152	0.066

In Table 42 incongruent students had higher levels of career commitment (M = 3.69, SD = .61) than congruent students (M = 3.49, SD = .73). The t-test results were statistically non-significant, t (152) = 1.85, p = .066. The difference in career commitment levels between congruent and incongruent Governance students was not statistically significant.

Below in Table 43 it is shown that congruent students had higher levels of work identity (M = 5.06, SD = .84) than incongruent students (M = 5.01, SD = .94). The t-test results were statistically non-significant, t (151) = -.36, p = .716. The difference in work identity between congruent and incongruent Governance students was not statistically significant.

Table 43

Within Group Differences in Work Identity of Governance Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Work Identity	Incongruent	73	5.0118	.94356
	Congruent	80	5.0646	.84964

Table 43 (continued)

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Work Identity	Equal variances assumed	1.551	0.215	-0.364	151	0.716

Table 44

Within Group Differences in Vocational Identity of Governance Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Vocational Identity	Incongruent	71	29.7042	4.55253
	Congruent	81	29.8765	3.22251

T-test

Levene's Test for Equality of Variances				t-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Vocational Identity	Equal variances not assumed	8.609	0.004	-0.266	124.052	0.791

In Table 44 congruent students had higher levels of vocational identity (M = 29.87, SD = 3.22) than incongruent students (M = 29.70, SD = 4.55). The t-test results were statistically non-significant, t (124.052) = -.26, p = .791. The difference in vocational identity between congruent and incongruent Governance students was not statistically significant.

Table 45

Within Group Differences in Investigative Interest/Personality Scores of Governance Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Investigative	Incongruent	73	2.2274	1.07977
	Congruent	81	2.1802	.99680

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Investigative	Equal variances assumed	0.120	0.729	0.282	152	0.779

In Table 45 incongruent students had higher Investigative interest/personality scores (M = 2.22, SD = 1.07) than congruent students (M = 2.18, SD = .99). The t-test results were statistically non-significant, t (152) = .28, p = .779. The difference in Investigative interest/personality scores between congruent and incongruent Governance students was not statistically significant.

Table 46

Within Group Differences in Artistic Interest/Personality Scores of Governance Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Artistic	Incongruent	73	2.8411	1.13037
	Congruent	81	2.6864	1.04687

Table 46 (continued)

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Artistic	Equal variances assumed	0.520	0.472	0.882	152	0.379

In Table 46 incongruent students had higher Artistic interest/personality scores (*M* = 2.84, *SD* = 1.13) than congruent students (*M* = 2.68, *SD* = 1.04). The *t*-test results were statistically non-significant, *t* (152) = .88, *p* = .379. The difference in Artistic interest/personality scores between congruent and incongruent Governance students was not statistically significant.

Table 47

Within Group Differences in Social Interest/Personality Scores of Governance Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Social	Incongruent	73	3.3863	1.05637
	Congruent	81	3.2914	1.10093

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Social	Equal variances assumed	0.358	0.550	0.545	152	0.587

In Table 47 incongruent students had higher Social interest/personality scores (*M* = 3.38, *SD* = 1.05) than congruent students (*M* = 3.29, *SD* = 1.10). The *t*-test results were statistically non-significant, *t* (152) = .54, *p* = .587. The difference in Social interest/personality scores between congruent and incongruent Governance students was not statistically significant.

Table 48

Within Group Differences in Conventional Interest/Personality Scores of Governance Students as a Function of Congruence

Mean Scores

	P-E fit	*N*	*M*	*SD*
Conventional	Incongruent	72	2.7472	1.11127
	Congruent	81	2.7481	1.00239

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Conventional	Equal variances assumed	0.645	0.423	-0.005	151	0.996

In Table 48 congruent students had slightly higher Conventional interest/personality scores (M = 2.74, SD = 1.00) than incongruent students (M = 2.74, SD = 1.11). The t-test results were statistically non-significant, t (151) = -.00, p = .996. The difference in Conventional interest/personality scores between congruent and incongruent Governance students was not statistically significant.

4.1.4 Between Group Differences: Vocational Behaviour Indicators. The following questions were addressed: i) Are there differences in vocational behaviour between congruent Governance (Public Administration and Management) students and Business Management students? ii) Are there differences in vocational behaviour between incongruent Governance students and Business Management students?

Note: Appendices D and E contain comprehensive tables of results.

Mean scores on vocational behaviour indicators for congruent and incongruent Governance students and congruent and incongruent Business Management students were obtained. The results and conclusions are presented in the tables below. Furthermore, t-tests for independent groups (between group differences) were performed to examine the difference in vocational behaviour between Business Management students and Governance students.

The following observations were made:

- As a function of incongruence, the *t*-test results were statistically significant on career commitment, and Realistic- and Enterprising interests/personality type. On all other remaining indicators of vocational behaviour (career decision-making self-efficacy, work identity, vocational identity, Investigative-, Artistic-, Social- and Conventional interests/personality types) the *t*-test results were not statistically significant. The statistics are reported in the respective tables below.
- As a function of congruence, the *t*-test results were significant on career decision-making self-efficacy and work identity behaviour and Realistic- and Enterprising interests/personality type. For the other vocational behaviour indicators (career commitment, vocational identity, and Investigative-, Artistic-, Social- and Conventional interests/personality types) the *t*-test results were insignificant. The statistics are reported in the respective tables below.

4.1.4.1 Vocational Behaviour as a Function of Incongruence. The results for incongruent Business Management *versus* incongruent Governance students are presented below.

Table 49

Between Group Differences in Career Commitment of Post-Graduate Management Students as a Function of Incongruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Career Commitment	Business management students	44	3.4058	.71325
	Governance students	73	3.6967	.61765

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Career Commitment	Equal variances assumed	.285	.594	-2.326	115	.022

In Table 49 above incongruent Governance students had higher levels of career commitment (*M* = 3.69, *SD* = .61) than their incongruent Business Management counterparts (*M* = 3.40, *SD* = .71), *t* (115) =-2.32, *p* = .022. The difference in career commitment levels between incongruent Business Management and Governance students was statistically significant.

Table 50

Between Group Differences in Realistic Interest/Personality Scores of Post-Graduate Management Students as a Function of Incongruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Realistic	Business management students	44	2.1545	1.03597
	Governance students	73	1.6740	.82698

T-test

Levene's Test for Equality of Variances				t-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Realistic	Equal variances not assumed	6.103	.015	2.616	75.705	.011

In Table 50 incongruent Business Management students had higher Realistic interest/personality scores (*M* = 2.15, *SD* = 1.03) than their incongruent Governance counterparts (*M* = 1.67, *SD* = .82), *t* (75.705) = 2.61, *p* = .011. The difference in Realistic interest/personality scores between incongruent Business Management and Governance students was statistically significant.

Table 51

Between Group Differences in Enterprising Interest/Personality Scores of Post-Graduate Management Students as a Function of Incongruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Enterprising	Business management students	44	3.3727	.69495
	Governance students	73	4.1342	.57257

T-test

Levene's Test for Equality of Variances				t-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Enterprising	Equal variances assumed	.204	.652	-6.424	115	.000

In Table 51 above incongruent Business Management students had lower Enterprising interest/personality scores (M = 3.37, SD = .69) compared to incongruent Governance students (M = 4.13, SD = .57), t (115) = -6.42, p = .000. The difference in Enterprising interest/personality scores between incongruent Business Management and Governance students was statistically significant.

Insignificant findings on between group differences for incongruent Business Management students *versus* incongruent Governance students are presented below.

Table 52

Between Group Differences in Career Decision-Making Self-Efficacy of Post-Graduate Management Students as a Function of Incongruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Career Decision-Making Self-Efficacy	Business management students	43	4.0558	.51189
	Governance students	73	4.0225	.47272

Table 52 (continued)

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Career Decision-Making Self-Efficacy	Equal variances assumed	.006	.937	.356	114	.723

Incongruent Business Management and Governance students had virtually equal mean scores (M = 4.05, SD = .51 and M = 4.02, SD = .47, respectively). The t-test results were statistically non-significant, t (114) = .35, p = .723. The difference in career decision-making self-efficacy scores between incongruent Business Management and Governance students was not statistically significant.

Table 53

Between Group Differences in Work Identity of Post-Graduate Management Students as a Function of Incongruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Work Identity	Business management students	42	4.9015	.76763
	Governance students	73	5.0118	.94356

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Work Identity	Equal variances assumed	2.547	.113	-.645	113	.520

Table 53 illustrates that incongruent Governance students had higher levels of work identity (M = 5.01, SD = .94) than their incongruent Business Management counterparts (M = 4.90, SD = .76). The t-test results were statistically non-significant, t (113) = -.64, p =

.520. The difference in the work identity between incongruent Business Management and Governance students was not statistically significant.

Table 54

Between Group Differences in Vocational Identity of Post-Graduate Management Students as a Function of Incongruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Vocational Identity	Business management students	41	30.9024	3.81972
	Governance students	71	29.7042	4.55253

T-test

Levene's Test for Equality of Variances				t-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Vocational Identity	Equal variances assumed	1.621	.206	1.420	110	.158

in Table 54 incongruent Business Management students had higher levels of vocational identity (*M* = 30.90, *SD* = 3.81) than their Governance counterparts (*M* = 29.70, *SD* = 4.55). The *t*-test results were statistically non-significant, *t* (110) = 1.42, *p* = .158. The difference in vocational identity between incongruent Business Management and Governance students was not statistically significant.

Below in Table 55 it is seen that incongruent Business Management students had higher Investigative interest/personality scores (*M* = 2.25, *SD* = 1. 05) than their Governance counterparts (*M* = 2.22, *SD* = 1.07). The *t*-test results were statistically non-significant, *t* (115) = .11, *p* = .912. The difference in Investigative interest/personality scores between incongruent Business Management and Governance students was not statistically significant.

Table 55

Between Group Differences in Investigative Interest/Personality Scores of Post-Graduate Management Students as a Function of Incongruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Investigative	Business management students	44	2.2500	1.05841
	Governance students	73	2.2274	1.07977

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Investigative	Equal variances assumed	.257	.613	.110	115	.912

Table 56

Between Group Differences in Artistic Interest/Personality Scores of Post-Graduate Management Students as a Function of Incongruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Artistic	Business management students	44	2.6864	1.04894
	Governance students	73	2.8411	1.13037

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Artistic	Equal variances assumed	.604	.439	-.737	115	.463

In Table 56 above incongruent Governance students had slightly higher Artistic interest/personality scores (M = 2.84, SD = 1.13) than their incongruent Business Management counterparts (M = 2.68, SD = 1.04). The t-test results were statistically non-significant, t (115) = -.73, p = .463. The difference in Artistic interest/personality scores between the two groups was not statistically significant.

Table 57

Between Group Differences in Social Interest/Personality Scores of Post-Graduate Management Students as a Function of Incongruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Social	Business management students	44	3.3636	1.04349
	Governance students	73	3.3863	1.05637

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Social	Equal variances assumed	.014	.904	-.113	115	.910

It is seen in Table 57 that incongruent Governance students and their Business Management counterparts had virtually equal Social interest/personality scores (M = 3.38, SD = 1.05 and M = 3.36, SD = 1.04, respectively). T-test results were statistically non-significant, t (115) = -.11, p = .910. The difference in Social interest/personality scores between incongruent Business Management and Governance students was not statistically significant.

Below in Table 58 it is illustrated that incongruent Business Management students had higher Conventional interest/personality scores (M = 2.93, SD = 1.02) than their Governance counterparts (M = 2.74, SD = 1.11). The t-test results were statistically non-significant, t (112) = .90, p = .366. The difference in Conventional interest/ personality scores between incongruent Business Management and Governance students was not statistically significant.

Table 58

Between Group Differences in Conventional Interest/Personality Scores of Post-Graduate Management Students as a Function of Incongruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Conventional	Business management students	42	2.9381	1.02979
	Governance students	72	2.7472	1.11127

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Conventional	Equal variances assumed	.846	.360	.908	112	.366

4.1.4.2 Vocational Behaviour as a Function of Congruence. The results for congruent Business Management students *versus* congruent Governance students are presented below.

Table 59

Between Group Differences in Career Decision-Making Self-Efficacy of Post-Graduate Management Students as a Function of Congruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Career Decision-Making Self-Efficacy	Business management students	160	4.1547	.53340
	Governance students	81	3.8005	.55877

Table 59 (continued)

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Career Decision-Making Self-Efficacy	Equal variances assumed	.006	.940	4.793	239	.000

In Table 59 it is shown that congruent Business Management students had higher levels of career decision-making self-efficacy (M = 4.15, SD = .53) than congruent Governance students (M = 3.80, SD = .55), t (239) = 4.79, p = .000. The difference in career decision-making self-efficacy scores between congruent Business Management and Governance students was statistically significant.

Table 60

Between Group Differences in Work Identity of Post-Graduate Management Students as a Function of Congruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Work Identity	Business management students	146	4.7936	.77477
	Governance students	80	5.0646	.84964

T-test

Levene's Test for Equality of Variances				t-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Work Identity	Equal variances assumed	.974	.325	-2.429	224	.016

In Table 60 above congruent Governance students had higher levels of work identity (M = 5.06, SD = .84) than congruent Business Management students (M = 4.79, SD = .77),

t (224) = -2.42, *p* = .016. The difference in work identity levels between congruent Business Management and Governance students was statistically significant.

Table 61

Between Group Differences in Realistic Interest/Personality Scores of Post-Graduate Management Students as a Function of Congruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Realistic	Business management students	162	1.6247	.84464
	Governance students	81	2.2741	1.17875

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Realistic	Equal variances not assumed	15.088	.000	-4.423	122.343	.000

Table 61 shows that congruent Governance students had higher Realistic interest/ personality scores (*M* = 2.27, *SD* = 1.17) than congruent Business Management students (*M* = 1.62, *SD* = .84), *t* (122.343) = -4.42, *p* = .000. The difference in Realistic interest/personality scores between congruent Business Management students and congruent Governance students was statistically significant.

Table 62

Between Group Differences in Enterprising Interest/Personality Scores of Post-Graduate Management Students as a Function of Congruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Enterprising	Business management students	162	4.2543	.48173
	Governance students	81	3.1062	.81553

Table 62 (continued)

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Enterprising	Equal variances not assumed	16.954	.000	11.692	108.704	.000

In Table 62 congruent Business Management students had higher Enterprising interest/personality scores ($M = 4.25$, $SD = .48$) than congruent Governance students ($M = 3.10$, $SD = .81$), t (108.704) = 11.69, $p = .000$. The difference in Enterprising interest/personality scores between congruent Business Management students and congruent Governance students was statistically significant.

Insignificant findings on between group differences for congruent Business Management students *versus* congruent Governance students are presented below.

Table 63

Between Group Differences in Career Commitment of Post-Graduate Management Students as a Function of Congruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Career Commitment	Business management students	162	3.3907	.79225
	Governance students	81	3.4921	.73783

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Career Commitment	Equal variances assumed	.124	.725	-.962	241	.337

In Table 63 above congruent Governance students had slightly higher levels of career commitment (*M* = 3.49, *SD* = .73) than their Business Management counterparts (*M* = 3.39, *SD* = .79). The results were statistically non-significant, *t* (241) = -.96, *p* = .337. The difference in career commitment between congruent Business Management and Governance students was not statistically significant.

Table 64

Between Group Differences in Vocational Identity of Post-Graduate Management Students as a Function of Congruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Vocational Identity	Business management students	158	30.0063	3.99282
	Governance students	81	29.8765	3.22251

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Vocational Identity	Equal variances not assumed	4.231	.041	.271	194.189	.787

Table 64 shows that congruent Business Management students had higher levels of vocational identity (*M* = 30.00, *SD* = 3.99) than congruent Governance students (*M* = 29.87, *SD* = 3.22). The results were statistically non-significant, *t* (194.189) = .27, *p* = .787. The difference in levels of vocational identity between congruent Business Management students and congruent Governance students was not statistically significant.

4.1.4.3 Interest/Personality as a Function of Congruence. The results for congruent Business Management students *versus* congruent Governance students are presented in the tables below.

Table 65

Between Group Differences in Investigative Interest/Personality Scores of Post-Graduate Management Students as a Function of Congruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Investigative	Business management students	162	2.1531	.95840
	Governance students	81	2.1802	.99680

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Investigative	Equal variances assumed	.191	.662	-.205	241	.837

In Table 65 congruent Governance students had higher Investigative interest/ personality scores (M = 2.18, SD = .99) than congruent Business Management students (M = 2.15, SD = .95). The t-test results were statistically non-significant, t (241) = -.20, p = .837. The difference in Investigative interest/personality scores between congruent Business Management students and congruent Governance students was not statistically significant.

Table 66

Between Group Differences in Artistic Interest/Personality Scores of Post-Graduate Management Students as a Function of Congruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Artistic	Business management students	162	2.8630	1.08324
	Governance students	81	2.6864	1.04687

Table 66 (continued)

T-test

Levene's Test for Equality of Variances				t-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Artistic	Equal variances assumed	.000	.995	1.211	241	.227

In Table 66 above congruent Business Management students had higher Artistic interest/personality scores (*M* = 2.86, *SD* = 1.08) than congruent Governance students (*M* = 2.68, *SD* = 1.04). The *t*-test results were statistically non-significant, *t* (241) = 1.21, *p* = .227. The difference in Artistic interest/personality scores between congruent Business Management students and congruent Governance students was not statistically significant.

Table 67

Between Group Differences in Social Interest/Personality Scores of Post-Graduate Management Students as a Function of Congruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Social	Business management students	162	3.4556	.95025
	Governance students	81	3.2914	1.10093

T-test

Levene's Test for Equality of Variances				*t*-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Social	Equal variances assumed	2.846	.093	1.203	241	.230

In Table 67 congruent Business Management students had higher Social interest/personality scores (*M* = 3.45, *SD* = .95) than congruent Governance students (*M* = 3.29, *SD* = 1.10). The *t*-test results were statistically non-significant, *t* (241) = 1.20, *p* = .230. The

difference in Social interest/personality scores between congruent Business Management students and congruent Governance students was not statistically significant.

Table 68

Between Group Differences in Conventional Interest/Personality Scores of Post-Graduate Management Students as a Function of Congruence

Mean Scores

	Academic Environment Code	*N*	*M*	*SD*
Conventional	Business management students	162	2.5790	.90069
	Governance students	81	2.7481	1.00239

T-test

Levene's Test for Equality of Variances				t-test for Equality of Means		
		F	*Sig*	*t*	*df*	*Sig. (2-tailed)*
Conventional	Equal variances assumed	3.073	.081	-1.328	241	.185

In Table 68 congruent Governance students had higher Conventional interest/personality scores (M = 2.74, SD = 1.00) than their congruent Business Management counterparts (M = 2.57, SD = .90). The t-test results were statistically non-significant, t (241) = -1.32, p = .185. The difference in Conventional interest/personality scores between congruent Business Management students and congruent Governance students was not statistically significant.

4.1.4.4 Pearson Bivariate Correlation: Association of Congruence and Vocational Behaviour Indicators. Hypothesis testing regarding the association between congruence and the indicators of vocational behaviour (i.e., career commitment, career decision-making self-efficacy, vocational identity and work identity) was performed. Bivariate correlations between vocational behaviour indicators and congruence are reported in the tables below.

- H2a: Career commitment is positively associated with congruence amongst post-graduate management students.

Table 69

Pearson Bivariate Correlation Test: Career Commitment & Congruence

		Congruence (P-E fit)
Career Commitment	Pearson Correlation	-.103
	Sig. (2-tailed)	.052
	N	360

Table 69 illustrates that congruent post-graduate management students had low levels of career commitment. Results in Table 69 indicate a negative and significant relationship between career commitment and congruence, r (358) = -.103, p = .05. Career commitment was not positively associated with congruence amongst post-graduate management students. Based on this finding, H2a was rejected.

- H2b: Career decision-making self-efficacy is positively associated with congruence amongst post-graduate management students.

Table 70

Pearson Bivariate Correlation Test: Career Decision-Making Self-Efficacy & Congruence

		Congruence (P-E fit)
Career decision-making self-efficacy	Pearson Correlation	.001
	Sig. (2-tailed)	.989
	N	357

In Table 70 it is indicated that there was no relationship between career decision-making self-efficacy and congruence, r (355) = .001, p = .989. Career decision-making self-efficacy was not significantly associated with congruence amongst post-graduate management students. Based on this finding, H2b was rejected.

- H2c: Vocational identity is positively associated with congruence amongst post-graduate management students.

Table 71

Pearson Bivariate Correlation Test: Vocational Identity & Congruence

		Congruence (P-E fit)
Vocational Identity	Pearson Correlation	-.021
	Sig. (2-tailed)	.689
	N	351

Table 71 indicates a negative and non-significant relationship between vocational identity and congruence amongst post-graduate management students, r (349) = -.021, p = .689. There was no relationship between vocational identity and congruence. Based on this finding, H2c was rejected.

- H2d: Work identity is positively associated with congruence amongst post-graduate management students.

Table 72

Pearson Bivariate Correlation Test: Work Identity & Congruence

		Congruence (P-E fit)
Work Identity	Pearson Correlation	-.047
	Sig. (2-tailed)	.392
	N	341

Table 72 indicates a negative and non-significant relationship between work identity and congruence amongst post-graduate management students, r (399) = -.047, p = .392. There was no relationship between work identity and congruence. Based on this finding, H2d was rejected.

4.1.4.5 Further Hypothesis Testing: Congruence Predicts Vocational Behaviour. Further quantitative data analysis involved testing of the following hypotheses:

- H3a: Congruence among post-graduate management students predicts career commitment.

- H3b: Congruence among post-graduate management students predicts career decision-making self-efficacy.
- H3c: Congruence among post-graduate management students predicts vocational identity.
- H3d: Congruence among post-graduate management students predicts work identity.

The mean and standard deviation scores of post-graduate Business Management and Governance students on vocational behaviour indicators were obtained. The results are presented below in Table 73.

Table 73

Means and Standard Deviations of Vocational Behaviour Indicators of Post-Graduate Management Students as a Function of Congruence

Vocational behaviour indicators	P-E fit (Congruence)	*N*	*M*	*SD*
Career Decision-Making Self-Efficacy	Incongruent	116	4.0348	.48566
	Congruent	241	4.0357	.56629
Career Commitment	Incongruent	117	3.5873	.66737
	Congruent	243	3.4245	.77449
Work Identity	Incongruent	115	4.9715	.88151
	Congruent	226	4.8895	.81066
Vocational Identity	Incongruent	112	30.1429	4.32020
	Congruent	239	29.9623	3.74315

The above four hypotheses were tested. A summary of the *t*-test results on measures of vocational behaviour indicators is presented below in Table 74.

Table 74

Independent Samples T-Test: Vocational Behaviour Indicators

Vocational behaviour		Levene's Test for Equality of Variances		*t*-test for Equality of Means		
		F	*Sig.*	*t*	*df*	*Sig. (2-tailed)*
Career Decision-Making Self-Efficacy	Equal variances not assumed	3.991	.046	-.015	261.171	.988
Career Commitment	Equal variances assumed	2.253	.134	1.952	358	.050
Work Identity	Equal variances assumed	2.490	.115	.857	339	.392
Vocational Identity	Equal variances assumed	3.159	.076	.401	349	.689

- **Career Decision-Making Self-Efficacy**

Table 75

Between Group Differences in Career Decision-Making Self-Efficacy of Post-Graduate Management Students as a Function of Congruence

Vocational Behaviour	P-E fit (Congruence)	*N*	*M*	*SD*
Career Decision-Making Self-Efficacy (C D-M S-E)	Incongruent	116	4.0348	.48566
	Congruent	241	4.0357	.56629

Table 75 shows that the difference in levels of career decision-making self-efficacy between congruent post-graduate management students (M = 4.03, SD = .56) and their incongruent counterparts (M = 4.03, SD = .48) was not statistically significant, t (261.171) = -.01, p = .988. Based on this finding, H3b was rejected.

- **Career Commitment**

Table 76

Between Group Differences in Career Commitment of Post-Graduate Management Students as a Function of Congruence

Vocational Behaviour	P-E fit (Congruence)	*N*	*M*	*SD*
Career Commitment	Incongruent	117	3.5873	.66737
	Congruent	243	3.4245	.77449

Table 76 shows that incongruent students had higher levels of career commitment (*M* = 3.58, *SD* = .66) than congruent students (*M* = 3.42, *SD* = .77), *t* (358) = 1.95, *p* = .050. The difference in career commitment levels between congruent and incongruent post-graduate management students was statistically significant. However, prediction was not established. Based on this finding, H3a was rejected.

- **Work Identity**

Table 77

Between Group Differences in Work Identity of Post-Graduate Management Students as a Function of Congruence

Vocational Behaviour	P-E fit (Congruence)	*N*	*M*	*SD*
Work Identity	Incongruent	115	4.9715	.88151
	Congruent	226	4.8895	.81066

Table 77 shows that the difference in levels of work identity between congruent post-graduate management students (*M* = 4.88, *SD* = .81) and their incongruent counterparts (*M* = 4.97, *SD* = .88) was not statistically significant, *t* (339) = .86, *p* = .392. Based on this finding, H3d was rejected.

- **Vocational Identity**

Table 78

Between Group Differences in Vocational Identity of Post-Graduate Management Students as a Function of Congruence

Vocational Behaviour	P-E fit (Congruence)	*N*	*M*	*SD*
Vocational Identity	Incongruent	112	30.1429	4.32020
	Congruent	239	29.9623	3.74315

In Table 78 it is seen that the difference in levels of vocational identity between congruent post-graduate management students (M = 29.96, SD = 3.74) and their incongruent counterparts (M = 30.14, SD = 4.32) was not statistically significant, t (349) = .40, p = .689. Based on this finding, H3c was rejected.

Conclusion: In this cross-sectional study P-E fit (congruence) was significantly associated with only *one* of the vocational behaviour indicators viz., career commitment. Unexpectedly, congruence was not associated with the remaining vocational behaviour indicators (career decision-making self-efficacy, vocational identity, and work identity).

4.2 Phase Two Results

The descriptive and inferential statistical analyses are reported below.

4.2.1 Descriptive Statistical Analysis. The data analysis covered participants' demographic information including education, employment sector, job level, and academic programmes. Frequency distributions were used to conduct the analysis of demographic variables. Central tendency measures (mean, median, and standard deviation) were used to conduct the descriptive analysis of the constructs of vocational behaviour indicators.

The Phase Two participants are a subsample of the Phase One sample. However, the demographic make-up of this sub-sample did not necessarily mirror the Phase One demographic profile, as most participants in Phase One did not respond to the Phase Two survey. As a result, the demographic information below is not reflective of the Phase One sample size. Some of the demographic variables pertaining to Phase Two study are presented below.

Table 79

Characteristics of Participants: Gender

Gender	Frequency	Percentage
Male	45	45
Female	55	55
Total	100	100
Missing	4	
Total	104	

The above results indicate that 55% of the study's participants were female, whilst men comprised 45% of the sample.

Table 80

Characteristics of Participants: Employment Level

Employment Level	Frequency	Percentage
Junior management	32	32
Middle management	32	32
Senior management	23	23
C-Suite	2	2
Partner	1	1
Other	10	10
Total	100	100
Missing	4	
Total	104	

As shown in Table 80, the majority of participants (64%) reported their job level/status as either Junior management or Middle management. 23% were in Senior Management. The C-Suite category was endorsed by a mere 2% of respondents.

Table 81

Characteristics of Participants: Education and Training

Education and Training	Frequency	Percentage
Matric / Grade 12	1	1
Diploma	1	1
Bachelor's Degree	16	15,8
Honour's Degree	59	58,4
Master's Degree	24	23,8
Total	101	100
Missing	3	
Total	104	

Table 81 shows that the highest number of respondents (58.4%) held an Honour's Degree. The lowest qualification was a Matric/Grade 12, indicated by 1% of the respondents. The highest qualification (Master's Degree) was held by 23.8% of the participants.

Table 82

Characteristics of Participants: Years of Work Experience

Years of Work Experience	Frequency	Percentage
0-5	19	18,8
5-10	27	26,7
11-20	45	44,6
21-30	6	5,9
31-40	3	3
40+	1	1
Total	101	100
Missing	3	
Total	104	

Table 82 shows that most respondents (44.6%) reported having 11-20 years of work experience, followed by 26.7% of the respondents with 5-10 years of work experience. A minority of respondents (3%) reported having worked for 31-40 years, with even fewer respondents (1 %) reporting a work experience of more than 40 years.

Table 83

Characteristics of Participants: Employment Sector

Employment Sector	Frequency	Percentage
Accountancy, Banking & Finance	16	18,6
Business, Consulting & Management	12	14
Engineering & Manufacturing	14	16,3
Energy	4	4,7
Environment & Agriculture	5	5,8
Healthcare	6	7
Hospitality & Events Management	2	2,3
Information Technology	4	4,7
Marketing, Advertising & PR	6	7
Science & Pharmaceuticals	4	4,7
Transport & Logistics	2	2,3
Recruitment & HR	7	8,1
Leisure, Sport & Tourism	1	1,2
Creative Arts & Design	2	2,3
Other	1	1,2
Total	86	100
Missing	18	
Total	104	

Table 83 shows that the highest number of respondents were or had been employed in Accountancy, Banking & Finance (18.6%), followed by Engineering & Manufacturing (16.3%). The Business, Consulting & Management sector was endorsed by 14% of the participants, whilst Recruitment & HR was endorsed by 8.1% of respondents. Each of the remaining sectors were endorsed by very few participants.

Table 84

Characteristics of Participants: Degree Group (Academic Programmes)

Academic Programmes	Frequency	Percentage
MBA programme varieties	45	43,7
Specialised Master's (Governance)	39	37,9
Specialised Master's (Management)	19	18,4
Total	103	100

Table 84 shows that 37.9% of the respondents belonged to the Specialised Master's group in Governance; a larger number (43.7%) of the participants belonged to the MBA programme varieties group. The smallest number of respondents (18.4%) were drawn from the Specialised Master's group in the Business Sector. Figure 20 below illustrates the findings.

Figure 20

Degree Group in Percentage

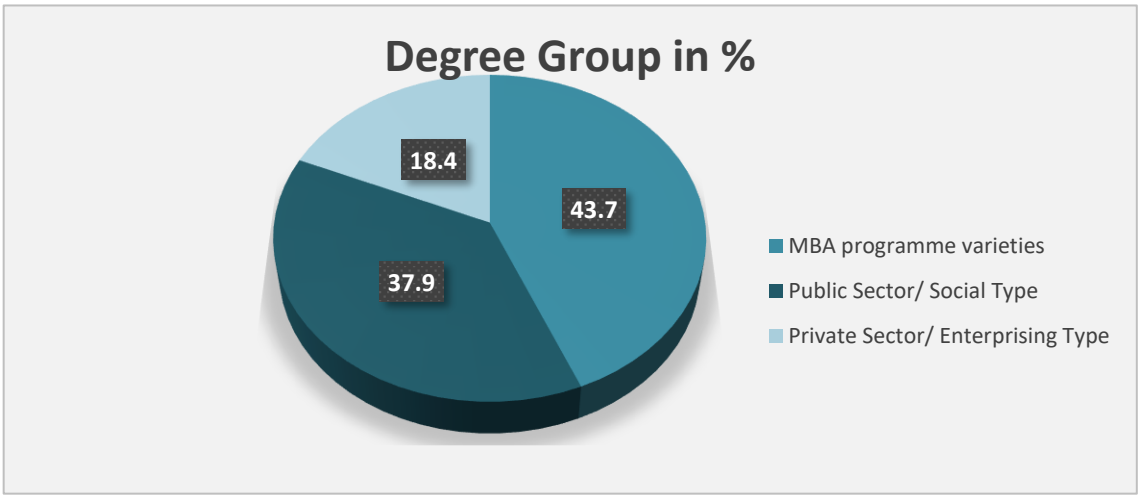


Table 85

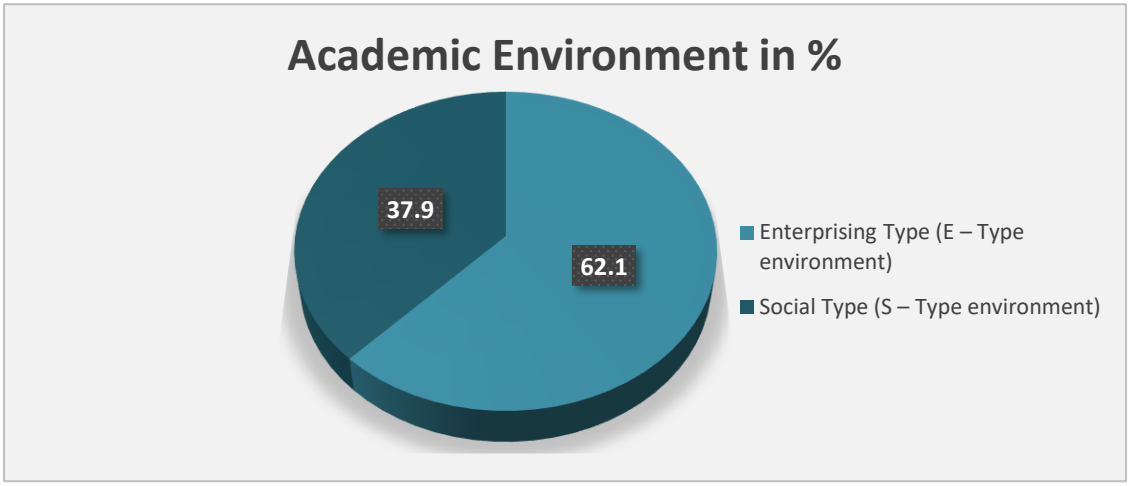
Characteristics of Participants: Academic Environment

Academic Environment	Frequency	Percentage
Enterprising Type (E-Type environment)	64	62,1
Social Type (S-Type environment)	39	37,9
Total	103	100

The majority of participants were found in the Enterprising Type environment (62.1%); whilst those in the Social Type environment constituted 37.9% of the sample. Figure 21 below illustrates the findings.

Figure 21

Academic Environment in Percentage



Central tendency measures were used to conduct the overall descriptive analysis of Career decision-making self-efficacy; Career commitment; and Work identity.

Table 86

Constructs of the Study

Constructs	*M*	*Mdn*	*SD*
Career decision-making self-efficacy	4.05	4.04	0.57
Career commitment	3.43	3.43	0.72
Work identity	4.84	4.79	0.91

Career decision-making self-efficacy: on a five-point Likert scale, the mean score of 4.05 suggests that the majority of respondents had much confidence in their ability to successfully complete tasks which are vital to the career decision-making process (Betz, 2000).

Career commitment: on a five-point Likert scale, the mean score of 3.43 suggests that most respondents tended to be neutral regarding their career commitment. This result indicates ambivalence regarding the respondents' willingness to maintain membership in their respective occupations.

Work identity: on a seven-point Likert scale, the overall mean score of 4.84 suggests that most respondents have a salient "work-based self-concept", which informs their job performance and the manner in which they conduct their careers (Walsh & Gordon, 2008).

Note: Vocational identity is a categorical variable for which measures of central tendency were not calculated. Reliability indices of the constructs used in the current study are shown in Appendix F.

4.2.2 Inferential Statistical Analyses. Inferential statistical analyses were performed to address the research questions and test the hypotheses of Phase Two study**.**

There was a severe sample attrition. From the initial sample of 360 respondents in the Phase One study, only 133 respondents participated in the Phase Two study. However, among these a further attrition occurred as 29 of the respondents omitted significant information in their responses. Accordingly, Phase Two of the study used a sample of 104 post-graduate students.

This section provides an account of the influence of the academic environment (post-graduate management programmes) on changes in the levels of vocational behaviour indicators of post-graduate management students. The following research questions for the Phase Two study are re-stated:

Research question 1: What is the effect of MBA/MBL core courses and the Specialised Master's programmes on students' vocational behaviour change?

Research question 2: What is the effect of congruence (P-E fit) on the vocational behaviour change of post-graduate management students in different academic environments? Accordingly, the following were the hypotheses of the Phase Two study in which congruence (P-E fit) was framed as a moderator variable, academic environment as a predictor variable and vocational behaviour change as an outcome variable:

- H4: Academic environment (Management education) changes the levels of post-graduate management students' vocational behaviour indicators.
- H4a: The relationship between academic environment (management education) and vocational behaviour change will be high for congruent management students.
- H4b**:** The relationship between academic environment (management education) and vocational behaviour change will be low for incongruent management students.

4.2.2.1 Independent Samples Test. An independent samples test (group difference analysis) was employed to test H4: Academic environment (Management education) changes the levels of post-graduate management students' vocational behaviour indicators.

Table 87

T-test: Effect of Academic Environment on Levels of Vocational Identity of Post-Graduate Management Students

Levene's Test for Equality of Variances		*t*-test for Equality of Means			
F	*Sig*	*t*	*df*	*P value*	Mean Difference
.801	.373	-1.518	97	.132	-.922

Significant changes in post-graduate management students' vocational identity were not observed. The *t*-test results were statistically non-significant, t (97) = -1.518, p = .132. The academic environment did not have a significant effect on their vocational identity. H4 was rejected based on this finding.

Table 88

T-test: Effect of Academic Environment on Levels of Career Decision-Making Self-Efficacy of Post-Graduate Management Students

Levene's Test for Equality of Variances		*t*-test for Equality of Means			
F	*Sig*	*t*	*df*	*P value*	Mean Difference
1.565	.214	-1.650	93	.102	-4.356

Significant changes in post-graduate management students' levels of career decision-making self-efficacy were not observed. The *t*-test results were statistically non-significant, *t* (93) = -1.650, *p* = .102. The academic environment did not have a significant effect on their levels of Career decision making self-efficacy. H4 was rejected based on this finding.

Table 89

T-test: Effect of Academic Environment on Levels of Work Identity of Post-Graduate Management Students

Levene's Test for Equality of Variances		*t*-test for Equality of Means			
F	*Sig*	*t*	*df*	*P value*	Mean Difference
1.682	.198	-.769	78	.444	-3.667

Significant changes in post-graduate management students' levels of work identity were not observed. The *t*-test results were statistically non-significant, *t* (78) = -.769, *p* = .444. The academic environment did not have a significant effect on their levels of work identity. H4 was rejected based on this finding.

Table 90

T-test: Effect of Academic Environment on Levels of Career Commitment of Post-Graduate Management Students

Levene's Test for Equality of Variances		*t*-test for Equality of Means			
F	*Sig*	*t*	*df*	*P value*	Mean Difference
.295	.588	-.100	99	.921	-.095

Significant changes in post-graduate management students' levels of career commitment were not observed. The *t*-test results were statistically non-significant, t (99) = -.100, p = .921. The academic environment did not have a significant effect on their levels of career commitment. Based on this finding, H4 was rejected.

Table 91

T-test: Effect of Academic Environment on Vocational Interest/Personality of Post-Graduate Management Students

Levene's Test for Equality of Variances		*t*-test for Equality of Means			
F	*Sig*	*t*	*df*	*P value*	Mean Difference
.431	.514.	-1.575	73	.120	-10.663

Significant changes in the vocational interest/personality of post-graduate management students were not observed. The *t*-test results were statistically non-significant, t (73) = -1.575, p = .120. The academic environment did not have a significant effect on the vocational interest/personality of post-graduate management students. Based on this finding, H4 was rejected.

4.2.2.2 Tests of Between-Subjects Effects. The tests were employed to test hypotheses H4a and H4b.

Research question 2: What is the effect of congruence (P-E fit) on the vocational behaviour change of post-graduate management students in different academic environments? The following attendant hypotheses were tested:

- H4a: The relationship between academic environment (management education) and vocational behaviour change will be high for congruent management students.
- H4b: The relationship between academic environment (management education) and vocational behaviour change will be low for incongruent management students.

Vocational behaviour indicator change scores were subjected to a two-way analysis of variance, having two levels of P-E fit (congruent, incongruent) and two levels of academic environment code (Enterprising type, Social type). All effects were statistically insignificant as reported in the tables below.

Table 92

Tests of Between-Subjects Effects: Vocational Identity

Dependent Variable: Vocational identity

Source	Type III Sum of Squares	*df*	*F*	*Sig.*
Corrected Model	34.356[a]	3	1.309	.276
Intercept	13.736	1	1.570	.213
Congruence (P-E fit)	.168	1	.019	.890
Academic Environment code	13.138	1	1.502	.223
Congruence (P-E fit) * Academic Environment code	14.073	1	1.609	.208

a. R Squared = .040 (Adjusted R Squared = .009)

The following can be concluded from Table 92:

- **Congruence (P-E fit):** The main effect of congruence yielded an *F* ratio of $F(1) = .01$, $p > .05$, indicating that congruent and incongruent students did not differ significantly in terms of their vocational identity change scores.
- **Academic Environment:** The main effect of academic environment yielded an *F* ratio of $F(1) = 1.50$, $p > .05$, indicating that Enterprising and Social environments did not significantly differ in terms of their impact on vocational identity change scores.
- **Congruence (P-E fit) * Academic Environment**: The interaction effect was non-significant, $F(1) = 1.60$, $p > .05$. This indicates that congruence did not moderate the effect of academic environment on vocational identity change.

Based on the aforementioned findings, H4a and H4b were rejected.

Table 93

Tests of Between-Subjects Effects: Career Decision-Making Self-Efficacy

Dependent Variable: Career decision-making self-efficacy

Source	Type III Sum of Squares	*df*	*F*	*Sig.*
Corrected Model	877.752[a]	3	1.876	.139
Intercept	537.441	1	3.446	.067
Congruence (P-E fit)	262.152	1	1.681	.198
Academic Environment	312.201	1	2.002	.161
Congruence (P-E fit) * Academic Environment	99.381	1	.637	.427

a. R Squared = .058 (Adjusted R Squared = .027)

The following can be concluded from Table 93:

- **Congruence (P-E fit):** The main effect of congruence yielded an *F* ratio of $F(1) = 1.68$, $p > .05$, indicating that congruent and incongruent students did not differ significantly in terms of their career decision-making self-efficacy change scores.
- **Academic Environment:** The main effect of academic environment yielded an *F* ratio of $F(1) = 2.00$, $p > .05$, indicating that Enterprising and Social environments did not

significantly differ in terms of their impact on career decision-making self-efficacy change scores.

- **Congruence (P-E fit) * Academic Environment:** The interaction effect was non-significant, $F(1) = .63$, $p > .05$. This indicates that congruence did not moderate the effect of academic environment on career decision-making self-efficacy change.

Based on the aforementioned findings, H4a and H4b were rejected.

Table 94

Tests of Between-Subjects Effects: Work Identity

Dependent Variable: Work identity

Source	Type III Sum of Squares	*df*	*F*	*Sig.*
Corrected Model	745.276[a]	3	.577	.632
Intercept	10.671	1	.025	.875
Congruence (P-E fit)	1.178	1	.003	.958
Academic Environment	344.863	1	.801	.374
Congruence (P-E fit) * Academic Environment	476.302	1	1.106	.296

a. R Squared = .022 (Adjusted R Squared = -.016)

The following can be concluded from Table 94:

- **Congruence (P-E fit):** The main effect of congruence yielded an *F* ratio of $F(1) = .00$, $p > .05$, indicating that congruent and incongruent students did not differ significantly in terms of their work identity change scores.
- **Academic Environment:** The main effect of academic environment yielded an *F* ratio of $F(1) = .80$, $p > .05$, indicating that Enterprising and Social environments did not differ significantly in terms of their impact on work identity change scores.
- **Congruence (P-E fit) * Academic Environment:** The interaction effect was non-significant, $F(1) = 1.10$, $p > .05$, indicating that congruence did not moderate the effect of academic environment on work identity change.

Decision: H4a and H4b were rejected.

Table 95

Tests of Between-Subjects Effects: Career Commitment

Dependent Variable: Career commitment

Source	Type III Sum of Squares	*df*	*F*	*Sig.*
Corrected Model	33.462[a]	3	.514	.674
Intercept	10.998	1	.506	.478
Congruence (P-E fit)	25.190	1	1.160	.284
Academic Environment	.206	1	.010	.923
Congruence (P-E fit) * Academic Environment	15.302	1	.705	.403

a. R Squared = .016 (Adjusted R Squared = -.015)

The following can be concluded from Table 95:

- **Congruence (P-E fit):** The main effect of congruence yielded an *F* ratio of $F(1) = 1.16$, $p > .05$, indicating that congruent and incongruent students did not differ significantly in terms of their career commitment change scores.
- **Academic Environment:** The main effect of academic environment yielded an *F* ratio of $F(1) = .01$, $p > .05$, indicating that Enterprising and Social environments did not differ significantly in terms of their impact on career commitment change scores.
- **Congruence (P-E fit) * Academic Environment:** The interaction effect was non-significant, $F(1) = .70$, $p > .05$. This indicates that congruence did not moderate the effect of academic environment on career commitment change.

Decision: H4a and H4b were rejected.

Table 96

Tests of Between-Subjects Effects: Vocational Interest/Personality

Dependent Variable: Vocational interest/personality

Source	Type III Sum of Squares	*df*	*F*	*Sig.*
Corrected Model	2082.858[a]	3	.829	.482
Intercept	548.840	1	.656	.421
Congruence	.933	1	.001	.973
Academic Environment	2062.788	1	2.464	.121
Congruence * Academic Environment	59.968	1	.072	.790

a. R Squared = .034 (Adjusted R Squared = -.007)

The following can be concluded from Table 96:

- **Congruence (P-E fit):** The main effect of congruence yielded an *F* ratio of $F(1) = .00$, $p > .05$, indicating that congruent and incongruent students did not differ significantly in terms of their vocational interest/personality change scores.
- **Academic Environment:** The main effect of academic environment yielded an *F* ratio of $F(1) = 2.46$, $p > .05$, indicating that Enterprising and Social environments did not differ significantly in terms of their impact on vocational interest/personality change scores.
- **Congruence (P-E fit) * Academic Environment:** The interaction effect was non-significant, $F(1) = .07$, $p > .05$. This indicates that congruence did not moderate the effect of academic environment on vocational interest/personality change.

Based on the aforementioned findings, H4a and H4b were rejected.

As mentioned in Chapter 3, in Phase One of the Study there were additional respondents that provided data on academic institution, academic programmes and academic environment choice. Accordingly, the sampel size of N = 370, rather than N = 360 is reported. In Phase Two of the study there was missing data for one respondent on academic programmes and academic enviroment. Acordingly, the sample size of N = 103, rather than N = 104 is reported. However, the changes in sample size did not significantly affect the overall results.

CHAPTER 5

DISCUSSION

This chapter discusses the results obtained in the two phases of the research, namely, the cross-sectional study (Phase One) intended to establish the baseline vocational behaviour and the longitudinal study (Phase Two) intended to determine the impact of management education i.e. 'environment', on vocational behaviour change. In the longitudinal study 'congruence' (P-E fit) was explored as a moderating variable of the environment-behaviour relationship. The discussion further entails the contribution and implications of the research.

5.1 Cross-Sectional Study (Phase One)

The aims of the research as stated in Chapter 1 were achieved. Holland's second assumption is that there are six model environments, namely the Realistic, Investigative, Artistic, Social, Enterprising and Conventional (Holland, 1985, p. 3). Two of the six model environments were the focus of the study, viz., the Social and Enterprising environments. Accordingly, the post-graduate management programmes were categorised as either the Enterprising type or the Social type model environments. Discriminant Function Analysis (DA) was used to predict the respondents' group membership within these post-graduate management academic programmes. Analysis of the results yielded two dominant RIASEC personality/interest types, viz., Enterprising type (E-type) and Social type (S-type), which were the focus of the study.

The vocational behaviour of individuals across post-graduate management programmes was measured and differential outcomes were obtained. Congruence (P-E fit) was observed for some respondents in the various academic programmes. Incongruence was also observed amongst the various groups of the study. The majority of respondents (61%) chose academic programmes classified in the E-type environment whilst 39% of the respondents targeted academic programmes classified in the S-type environment. According to the results, congruence (P-E fit) was established for the Enterprising group. However, congruence for the Social group was not established. The incongruence observed in the Social group stems from the fact that a significant percentage of respondents with the Social personality type were found in the E-type environment (Business Management programmes). Some participants in the Governance programme, which is typically a Social type environment, were nevertheless identified as belonging to the Enterprising personality type, which suggests that governance is as much an Enterprising activity as it is a Social one. Interestingly, this finding gives credence

to the following opinion of Schlegelmilch and Thomas (2011): "Management…is open to everyone… Indeed, managers do not necessarily need to have studied at all. They can be gifted amateurs!" (p. 476). The results revealed that the Enterprising personality type was the best predictor of both the E-type and S-type environments in South Africa. It can be concluded that in this study Holland's congruence (P-E fit) theory was valid for the Enterprising personality type. However, the theory was not conclusively supported by the Social personality type, as a substantial number of the Social group were found in the E-type environment.

5.1.1 Management Education and Personality Type. The outcomes of the study established a significant relationship between the choice of management education programme and personality type of participants. Students with the predicted E-type personality were most likely to be found in the Business Management programmes while students with the predicted S-type personality were likely to have chosen the Governance programmes. The study conclusively indicated a positive association between students' predicted personality type and their chosen academic programme i.e., P-E fit was established, thereby upholding Hypothesis 1a and Hypothesis 1b of the study. This was in keeping with Holland's third working assumption, viz., "People search for environments that will let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles" (Holland,1985, p. 4). This study further examined the vocational behaviour of students across the post-graduate management programmes. In this regard differences in vocational behaviour were found between Business Management students and Governance students, and also within these two groups. Specifically, P-E fit produced different vocational behaviour for these groups.

Within the Business Management group, congruent Business Management students had significantly higher Enterprising interest/personality scores than incongruent students, whilst incongruent Business Management students had significantly higher Realistic interest/personality scores than congruent students. Moreover, incongruent Business Management students had significantly higher Conventional interest/personality scores than their congruent counterpart. This finding was consistent with Holland's theory: Enterprising students had chosen a suitable management programme (demonstrating P-E fit) whilst incongruent students had made an unsuitable choice of management education programme. The findings further indicated that vocational behaviour was not significantly different for congruent and incongruent Business Management students on the following vocational behaviour indicators: career decision-making self-efficacy, career commitment, work identity,

vocational identity, Investigative interest/ personality, Artistic interest/personality and Social interest/personality.

Academic programme choice is considered, inter alia, in relation to career development goals (Baruch et al., 2005). There is merit in the insignificant within group differences amongst Business Management students, when considering that the vocational behaviour indicators in question have characteristics that lend themselves to career development goals and goal achievement. Career development goals could be extrapolated from the vocational behaviour indicators and vocational interest/personality associated with the Business Management academic programmes. As such, career decision-making self-efficacy (self-confidence in one's own ability to finish tasks which are essential to career decision-making), career commitment (believing in and accepting the value of one's chosen occupation or line of work and willingness to maintain membership in that occupation), work identity (a work-based self-concept, comprised of organisational, occupational, and other identities, that shape the roles people adopt and their corresponding work performance within their careers) and vocational identity (having a clear and stable picture of one's goals, interests, personality and talents), represent/may be interpreted as career development goal achievement enablers that are associated with the Business Management academic programme. Moreover, having a differentiated vocational interest/personality (e.g., Investigative-, Artistic-, and Social-) is indicative of a coherent identity that lends itself to a decisive vocational choice, which in turn is likely to aid an individual in their career development and goal achievement.

Barber (2018) laments that the MBA is regarded by some as a glorified programme, only useful for its perceived prestige. Furthermore, Barber (2018) exposes the artistic void that plagues MBA curricula, identifying "intellectual creativity and problem-solving" as hallmarks of a "transformative MBA", with the endgame of the 'transformed MBA' within the workplace being 'professional innovation'. The current cross-sectional study revealed all Artistic interest/personality type findings (within and between group differences) as statistically insignificant, thereby validating the claims made by Barber (2018) regarding the dearth of and need for an artistic/creative dimension in management education. The Business Management academic environment (MBA/MBL and Specialised Management Master's) was predominantly Enterprising and Artistic interest/personalities were not prominent. Whilst there are calls to reimagine and remaster MBA programmes in ways that accommodate creativity (Barber, 2018; Caza et al., 2015; Mintzberg, 2004; Pounder & Ross, 2018), the results of the present study suggest that the MBA/MBL programmes are not attracting Artistic interest/

personalities on a significant scale. Against the backdrop of Holland's (1985) theory, the implication is that there is no "artistic magnet" embedded within the Business Management academic environment that attracts Artistic interest/personality types. Practically, this observation suggests that the MBA programme content and possibly the manner in which such programmes are branded do not boldly appeal to prospective candidates whose vocational personalities are of the Artistic type. This conclusion is in direct opposition to the findings of Gupta and Bennett (2014), who examined the value of the MBA degree to organisations. Regarding the psychological impact of MBA programmes, qualitative MBA courses were significantly related to ingenious, logical, and social capital, whilst quantitative courses were connected to administrative and ingenious skills (Gupta & Bennett, 2014).

Within the Governance group, incongruent students had significantly higher levels of career decision-making self-efficacy (CDMSE) and higher Enterprising interest/personality scores than congruent students. The higher Enterprising interest/personality finding confirms the misfit of the students in relation to their chosen academic environment. The high career decision-making self-efficacy levels may indicate that these incongruent Governance students desire to step out of their Social academic environment and possibly Social work environments that are in opposition to their Enterprising vocational personality. In establishing high levels of career decision-making self-efficacy, these individuals would have to make some career decisions, inter alia: determining what their ideal job would be, choosing a career that would fit their preferred lifestyle, and changing their occupation should they become dissatisfied with the one they had entered. According to Holland (1985), environments tend to expel individuals that are incongruent. There is consistency in the finding of high levels of CDMSE and Enterprising interest/personality amongst incongruent Governance students whose attention is likely fixed outside the Social environment from which they probably experience 'expulsion' as a result of person-environment misalignment.

Vocational behaviour was not significantly different for congruent and incongruent Governance students on the following indicators: career commitment, work identity, vocational identity, Investigative-, Artistic-, Social- and Conventional interest/ personality. The advantage of insignificant findings regarding within group differences in vocational behaviour amongst Governance students is that these students share vocational behaviour that can promote career development and goal achievement. The theme of academic programme choice and career development goals (Baruch et al., 2005) applies. As such, career commitment, work identity and vocational identity may be interpreted as career development and goal achievement

enablers that are associated with the Governance students' academic programme choice. This group of students also share differentiated vocational interests/personalities, namely Investigative, Artistic, Social and Conventional.

5.1.2 Vocational Behaviour as a Function of Incongruence: Between Group Differences. Significant differences in vocational behaviour between Business Management students and Governance students were found. In this regard, incongruent Governance students had significantly higher levels of career commitment than their incongruent Business Management counterparts, while incongruent Business Management students had significantly higher Realistic interest/personality scores than their incongruent Governance counterparts. According to Holland (1985), people with a Realistic interest/personality are inclined to prefer "…realistic occupations or situations in which they can engage in preferred activities and avoid the activities demanded by social occupations or situations" (p. 19). The idea of 'preference' conveys selectivity and a tendency to adhere to something specific rather than an acceptance of an 'array of options'. This result is in keeping with the theme of a generalist MBA (which introduces students to the functional areas of business as well as an array of management employment options that traverse employment sectors) versus a Specialised Master's programme (which is streamlined, consolidates students' academic speciality and encourages specialised management employment options). It may be that incongruent Business Management students with a pronounced Realistic interest/personality are averse to a generalist orientation that characterises the MBA/MBL education. However, Holland's (1985, p. 19) perspective explains the incongruent Governance students' finding. The Governance academic environment was designated as a Social environment. Theoretically, incongruent Governance students will not enjoy such an environment and hence would be predisposed to "…avoid the activities demanded by social occupations or situations" (Holland, 1985, p. 19).

Holland (1985) asserts that a person with a Realistic interest/personality "…value[s] concrete things or tangible personal characteristics – money, power, and status" (p. 19). Grey (2004) argues that values are inscribed in the domain of management even though they might not be acknowledged. Specifically, there is a 'power' factor embedded in management education and practice i.e., getting people to comply according to established management structures. The aforementioned finding (incongruent Business Management students' significantly higher Realistic interest/personality scores) therefore lends credence to Grey's (2004) power claim as the 'power' factor was observed, albeit in a subtle manner.

Incongruent Business Management students had significantly lower Enterprising interest/personality scores compared to Governance students. In the Governance academic environment congruent students would be of the Social personality type. The Business Management academic environment was designated as an Enterprising environment, therefore incongruent students would be expected to have low Enterprising interest/personality scores. On the one hand, Holland (1985) asserts that a Social interest/personality type "…uses social competencies to solve problems at work and in other settings; … perceives self as liking to help others, understanding others…" (p. 21). On the other hand, Holland (1985) opines that:

> The special heredity and experiences of the Enterprising person lead to a preference for activities that entail manipulation of others to attain organisational goals or economic gain; and an aversion to observational, symbolic, and systematic activities. These behavioural tendencies lead…to an acquisition of leadership, interpersonal and persuasive competencies… (p. 21).

There is an overlap between individuals with Enterprising characteristics (e.g., leadership, persuasion and interpersonal skills) and Social characteristics (e.g., providing social support and empathising with others). Incongruent Governance students (versus their incongruent Business Management counterparts) may be regarded to have the behaviour of both the Social (tactfulness, warmth, persuasion, friendliness, cooperativeness) and Enterprising (agreeableness, sociability, optimism, extroversion) types as detailed above. Incongruent Business Management students had significantly lower Enterprising interest/personality scores compared to Governance students, possibly as a result of Governance students seemingly "monopolising" Social and Enterprising characteristics, which exaggerates the differential outcome in Enterprising interest/personality between them and incongruent Business Management students.

There were insignificant findings for incongruent Business Management students *versus* incongruent Governance students on the following vocational behaviour indicators: career decision-making self-efficacy, work identity, vocational identity, Investigative-, Artistic-, Social- and Conventional interest/personality. These results indicate that incongruent Business Management students and Governance students largely share a vocational profile.

5.1.3 Vocational Behaviour as a Function of Congruence: **Between Group Differences.** Differences in vocational behaviour between Business Management students and Governance students were found. Studies indicate that the MBA is geared towards promoting

graduates' career development, whilst Professional Master's programmes are designed to deepen students' knowledge and competence in a specific area (Baruch et al., 2005; Gupta et al., 2007; Kumar, 2015). The interpretations below are in accordance with the research findings by the aforementioned authors.

On the one hand, congruent Business Management students had significantly higher levels of career decision-making self-efficacy and a far more pronounced Enterprising interest/personality than congruent Governance students. There is a strong reflective component attached to career decision-making tasks. Tuval-Mashiach (2017, as cited in Winiarska, 2017) outlines self-reflexivity as an introspective 'sense-making' process that is valuable to managers who have formal academic training, workplace training and institutional knowledge, and operate within organisations that are in continuous flux. This introspection categorises and personalises managers' daily experiences on-the-job as they interact with colleagues and reflect on how their working environment (social and technical) impacts their personality and vice-versa. Seemingly, congruent Business Management students may be viewed as having a greater capacity for "self-reflexivity" than their congruent Governance counterparts. Enterprising interest/personality types tend to be persuasive people who are suited to leadership roles within organisations or sales-type roles that require the individual to win over/ appeal to the interest of a target. Career decision-making self-efficacy emphasises the personal mastery of an individual and puts the person at the centre of their own development. Persons who are efficacious in the context of career decision-making tasks are likely to catalyse their career growth. Persuasiveness, decisiveness and initiative (agentic behaviour) are the characteristics typically associated with managers in the business sector. Furthermore, such characteristics foster career mobility. It is therefore not surprising that congruent business management students had significantly higher levels of career decision-making self-efficacy and Enterprising interest/personality scores than congruent Governance students.

On the other hand, congruent Governance students had significantly higher levels of work identity and Realistic interest/personality scores than congruent Business Management students. The Governance group falls into the Specialised Master's programme category. Given that such programmes incrementally build on students' undergraduate degree foci with the purpose of consolidating and enhancing a specialist career focus, it was not unexpected that this group had higher levels of work identity and Realistic interest/personality scores than congruent Business Management students. Congruent Governance students' more pronounced

Realistic interest/personality was in line with their specialised career focus. For instance, as opposed to having the potentially wide array of career options typically available to MBA graduates with a generalist management focus across industries, Governance graduates are likely to have a realistic (definite) approach to their career development. This realistic orientation takes cognisance of streamlined and function-specific roles within their sector of operation; roles which over time indicate a "specialist" progression (e.g., Undergraduate Teacher's training for placement in Government Schools, followed by post-graduate qualification in Public Administration and Management for placement in the role of a School Principal or District Director in the Public Sector).

There were insignificant findings for congruent Business Management students *versus* congruent Governance students on the following vocational behaviour indicators: career commitment, vocational identity, Investigative-, Artistic-, Social- and Conventional interest/personality. Barber (2018) asserts that managers' roles, including an appropriate skillset for the fourth industrial workplace, remain in flux. The author argues that 'innovative executive education' within this volatile context would be valuable. Similarly, Stoten (2018) supports an MBA that is 'fit for use'. The vocational behaviour indicators that are shared by congruent Business Management and congruent Governance students could be considered as "tools" in the survival box for graduates of these academic programmes in the Fourth Industrial Revolution workplace. Loyalty to one's career path (actively scanning the external environment for suitable opportunities), paired with self-understanding (identifying one's strengths, personal resources and limitations that can help or hinder one's career development) are survival aids that bolster employees' capacity to meet workplace demands and shifts in the external and internal organisational environment. A solid vocational personality (self-knowledge) should enable individuals to position themselves advantageously for appropriate career development opportunities in the fourth industrial workplace. Stoten's (2018) requirement of an MBA that is 'fit for use' can be generalised to Governance academic programmes too. The measured vocational behaviour associated with both congruent Business Management students and Governance students reflects a "shared reality" that is characteristic of the respective academic environments. The combination of vocational behaviour that these groups share (insignificant differences) is unique thereby qualifying them, according to Barber (2018), as "innovative executive education" offerings.

Pearson Bivariate Correlation was conducted to test the assumption that a high level of vocational behaviour is associated with congruence (P-E fit). This relates to Holland's fourth

assumption, viz., "Behaviour is determined by an interaction between personality and environment" (Holland, 1985, p. 4). The outcomes of the study indicated that congruence was associated with only one vocational behaviour indicator viz., career commitment; the association was negative albeit significant. Other vocational behaviour indicators were not significantly associated with congruence. On this basis Hypothesis 2 of the study was rejected. During the conceptualisation of the current study, the writer perceived that there was a gap for research on the immediate impact and psychological effect of MBA/MBL and Specialised Master's programmes beyond the classroom (managerial skillset). This research gap was validated by the 'congruence-career commitment' finding of the cross-sectional study. Therefore, the immediate impact and psychological effect of management education was on the students' levels of career commitment.

Rubin and Dierdorff (2013) posed the following question: "How can we foster more career awareness and enable students to more actively manage their career development?" (p. 136). The gap identified by Rubin and Dierdorff (2013) holds true in the current study. Accordingly, a negative relationship was discovered between congruence and career commitment. Students who were well-matched to their post-graduate management programmes were nevertheless not committed to their careers. A greater effort must be made to infuse career awareness into management education in a way that can be measured and thereby be proven to help students develop their careers.

5.1.4 Themes on Personality Type, Management Education Type and Vocational Behaviour. Several themes emerge from the outcomes of the present study. These include public value creation and leadership, decision-making and implementation within organisations, intrapreneurship, creativity/innovation, social value creation and organisational commitment, among others.

Public leadership. Torfing et al.'s (2019) research theme was 'transformation of the public sector into an arena for co-creation'. The authors argue that public professionals should take societal feedback seriously and invite participative management. The characteristics described in Holland's (1985) Social Type behaviour i.e., patience, cooperation, tactfulness, responsibility and kindness, may improve the appeal of public leaders to their followers. In the current study some of the Governance students were of a measured Social interest/personality type, with implicit capacity for social activities. Torfing et al. (2019) advocate for the transfer of managerial principles and tools from the private sector to the public sector for improved

service delivery, arguing that modern societal demands require collaborative problem solving from public and private entities. Findings of the current study, however, revealed that the target management programmes (Business Management and Governance) were each linked to different objectives. This observation suggests that there may be a unique academic service offering inherent in different management programmes/academic environments. Logically, graduates from these academic environments would not be homogenous, given that members of different professions respond differently to leader development interventions (Blair et al., 2014). This measured heterogeneity of post-graduate management students should enhance collaborative problem solving in the workplace.

Intrapreneurship. Farrukh et al. (2017) investigated the role of organisational commitment in the display of employees' intrapreneurial behaviour. Intrapreneurs are goal-oriented, proactive self-starters with leadership skills. The authors suggested that managers should communicate the organisational culture to all employees and foster an organisational climate that is conducive to intrapreneurial behaviour. Intrapreneurial behaviour is inherently artistic. Artistic vocational personalities have unique roles to play in organisational intrapreneurship. Artistic Types invoke their creative competencies to solve problems in the workplace. They have a dialectical mindset which allows them to reconcile conflicting information during the creative process. Furthermore, they prefer ambiguous and unsystematised tasks that require the manipulation of human, physical or verbal resources to create 'organisational works of art'. In the current study, however, Artistic interest/personality amongst post-graduate management students was virtually undetectable. In this regard, Table 11 revealed the sample's ambivalence towards Artistic activities. Furthermore, within and between group differences regarding this vocational personality were insignificant. These findings show why researchers and theorists like Farrukh et al. (2017) call for the development of an intrapreneurial atmosphere within organisations. In accordance with Farrukh et al. (2017), the study established measured behavioural elements that could catalyse intrapreneurial efforts of post-graduate management students, who are called to lead innovation within their respective organisations. These measured behavioural elements promote intrapreneurship: the Enterprising Type possesses leadership and persuasive competencies, enjoys problem solving and the manipulation of others to attain organisational goals or economic gain. Organisational goal attainment e.g., intrapreneurship, is within reach for the Enterprising Type as the development of intrapreneurial activity resonates with their conduct and characteristics. The Social Type prefers activities based on the training, development and enlightenment of

individuals. Such activities are inherently creative. The Social Type is socially calibrated and is proficient in soft skills (communication, cooperation, persuasion). Such behaviour creates a foundation for intrapreneurship.

Farrukh et al. (2017) highlight an innovative inclination and appetite for risk as tools for organisational problem solving. This appetite for risk and predisposition to innovation are mirrored by Holland's (1985, pp. 21-22) Enterprising Type characteristics (adventurous, ambitious, acquisitive) and Social Type characteristics (cooperative, persuasive, idealistic, helpful, responsible). Therefore, Business Management and Governance students (by virtue of their vocational personality types) are apt to possess and display the aforementioned behaviour/characteristics, which are conducive to intrapreneurial activity within the workplace.

The vocational behaviour indicators of career commitment and work identity represent psychological elements (within a career context), as mentioned by Farrukh et al. (2017). These measured elements, which reflect the behaviour of post-graduate management students, may be viewed as 'drivers'/catalysts of intrapreneurship, for the following reason: People who are single-minded about and committed to their careers/organisations are likely to draw inspiration from their employment context, and search for resources to support intrapreneurship.

Work Identity. This is an example of normative commitment, i.e., employees' attachment to their organisation based on norms, values, strategies, policies, procedures and practices (Farrukh et al., 2017). There is a 'personal investment' component in work identity. It is deduced that those who view themselves as connected to their organisation, its brand and internal social fabric, and view the organisation's successes as their own, and who view their jobs as a salient part of their identity, would support the organisational goal of developing an intrapreneurial culture. Normatively committed workers would be aware of performance management systems within their organisations and thus be likely to perform to the best of their ability (Farrukh et al., 2017). In this regard, the authors argue that organisations must catalyse and preserve normative and affective commitment of their employees. Stretching this line of thought, measuring post-graduate management students' work identity levels (an expression of normative commitment) may help employers ascertain performance expectations from these employees.

Experimentation as Innovative Strategy. Qazi et al. (2017) found a significant difference between managers and ordinary workers regarding the 'experimentation' dimension of organisational culture i.e., managers' level of experimentation was significantly lower, and

non-managers enjoyed significantly higher levels of job satisfaction than managers. It can be argued that "experimentation" is part of the creative process. Thus, the finding by Qazi et al. (2017) suggests reduced levels of creativity, openness and appetite for innovation amongst managers in their sample. Based on this interpretation, the Artistic interest/personality findings of the current study correspond with the views of Qazi et al. (2017), leading to the conclusion that post-graduate management students across academic programmes may shy away from organisational tasks/projects rooted in experimentation, innovation and creativity. Furthermore, they may be viewed as conservative employees/managers, who are 'implementers'/ 'doers', rather than 'strategy developers'/ 'thinkers'. Strategy development and implementation make for a resilient and agile organisation. The outcomes of Qazi et al. (2017) coupled with those of the current study suggest that there may be a leaning towards conservative decision-making and implementation within organisations, at the expense of innovative strategy development.

Differential Creativity/Innovation. Demircioglu and Audretsch (2017) focused on differential creativity/innovation within the public sector. The study's main finding was that there are systematic differences in the tendency to create/innovate across public sector organisations. Contrary to their finding, in the current study systematic and significant within-group differences (Governance and Business Management students) and between group differences (Governance versus Business Management students) in Artistic interest/personality with its associated behaviour, viz., creativity/innovation, were not established. The insignificant differences in Artistic interest/personality suggest that both Governance and Business Management students may lack the incentive to undertake innovative behaviour. Creativity and change are flagged by Pierce and Delbecq (1997, as cited in Demircioglu & Audretsch, 2017) as components of innovative behaviour. The authors state that deregulation, prioritisation of openness and provision of room for creativity and adaptation, incentivise public sector employees to undertake innovative behaviour in service delivery. These incentives synchronise with the characteristics of Holland's (1985) Artistic interest/personality type: "deregulation" is analogous to Holland's "unsystematised activities" and an aversion to "ordered activities" whilst "openness", "creativity" and "adaptation", correspond to the "ambiguous, imaginative and expressive" characteristics of Holland's Artistic Personality Type. Given the insignificant within and between group differences concerning the Artistic interest/personality type, it is considered that Governance students (some of whom work in the public sector) may lack the incentive to undertake innovative behaviour. Firstly, this could be

because their measured vocational personalities (and associated conduct) are not of the Artistic type; and secondly, because they are employed in work environments that are not characteristically Artistic, as Holland (1985) would have it. Whilst Demircioglu and Audretsch (2017) argue that deregulation, openness, creativity and adaptation incentivise public sector employees to innovate, the current study maintains that these "Artistic Type" incentives would likely appeal to public sector employees whose vocational personality is attracted by and well-matched to Artistic work environments (including the innovative activities that constitute the setting). Therefore, it may be naïve of public sector organisations to expect that deregulation, openness, opportunities for creativity and adaptation will catalyse their employees to behave innovatively, without paying attention to the fact that the employees' vocational personalities may differ and the public sector work environment may not be a congruent fit for all employees. Moreover, some public sector work environments may be categorised as "Artistic", but may be populated with a workforce whose vocational personality profile is in opposition to the Artistic environment.

Public and Social Value Creation. Public value creation is contingent on entrepreneurship, which, according to Meynhardt et al. (2017), hinges on introspection. According to Holland (1985, p. 21), 'introspection' is a characteristic behaviour of the Artistic personality type. However, in the current study the Governance group did not show strong preference for Artistic type activities, indicating that introspection is not a characteristic behaviour of those who operate in the realm of public administration and management. The Governance students would benefit from management education that is strongly infused with a creative pedagogy (public value creation) as this could serve as a performance management criterion (Meynhardt et al., 2017). Caldwell et al. (2017) maintain that divergent value systems undermine social value creation. The authors suggest that the creation of social value in hybrid organisations is challenging owing to difficulties such as dissimilar foundations of knowledge, divergent incentives, separate goals and value systems. This challenge is supported by Holland's (1985) theory of vocational personalities and work environments, which posits that different vocational personalities (RIASEC Types) are associated with different values. For instance, the *Enterprising Type* values political and economic achievement; the *Social Type* values social and ethical activities and problems; the *Artistic Type* values aesthetic qualities; while the *Realistic Type* values concrete things or tangible personal characteristics e.g., money, power and status. Caldwell et al. (2017) acknowledge that social value creation (which is community/society-centric) and economic value creation (which is the private sector's priority)

tend to be in competition. The authors suggest that the creation of social value in hybrid organisations is challenging, owing to failing alliances. On the other hand, Verweij et al. (2017) opine that the collaboration between public and private managers produces favourable outcomes. The contrast between public and private managers may set the stage for collaboration and co-creation between the groups, who may meet each other in the context of public-private projects in South Africa's open labour market.

Pro-Social Behaviour and Organisational Commitment. Glińska-Neweś and Szostek (2018) concluded their article by advising that private sector managers should encourage pro-social behaviour within their organisations with a view to bolstering social support amongst co-workers; similarly, public sector managers are encouraged to boost organisational commitment amongst their subordinates and general staff. In the current study, notable results regarding career commitment were obtained. According to these results, incongruent Governance students had significantly higher levels of career commitment than their incongruent Business Management counterparts (refer to Table 49); there was a negative and significant relationship between career commitment and congruence (refer to Table 69); and incongruent post-graduate management students had significantly higher levels of career commitment than congruent post-graduate management students (refer to Table 76). These results of the current study indicate that committed Governance students would be in a position to bolster commitment levels amongst their subordinates, thereby implementing the recommendations of Glińska-Neweś and Szostek (2018). The current study highlights the need for managers and managers-in-training to build their career commitment first, before they can encourage the development of organisational commitment amongst their subordinates, as suggested by Glińska-Neweś and Szostek (2018).

Work Identity. The results of the current study suggested that on the work identity construct most respondents had a salient "work-based self-concept", which informs their job performance and the manner in which they conduct their careers (Walsh & Gordon, 2008). Congruent Governance students had a significantly stronger sense of work identity than congruent Business Management students. The work identity results of the current study may be categorised as "moderate" according to McKevitt et al. (2017), leading to the conclusion that the post-graduate students viewed their employment at most as a "career" and at the very least as a "job". Sveningsson and Alvesson (2003, as cited in Saayman & Crafford, 2011), caution that job frustration can cause a weakened sense of work identity in spite of the employee's ability to perform job tasks and work roles. On the other hand, work identity will

be promoted in the event that individuals identify with their work, can negotiate their work roles and their job expectations are met (Saayman & Crafford, 2011). In keeping with Saayman and Crafford (2011), the salient work identity finding suggests that the post-graduate management students had latitude to negotiate their roles, identified with their employment and felt employment satisfaction.

Incongruence and Negative Sequelae. Spokane et al. (2000) highlighted the ethical danger of conducting true experimental studies of congruence with human participants because incongruence has been associated with reduced wellbeing (e.g., anxiety). The current study contradicted the idea that incongruence is associated with negative outcomes, as suggested by Holland (1985) and Spokane et al. (2000). Interestingly, the cross-sectional study revealed that incongruent students still enjoyed/experienced positive vocational behaviour. Moreover, in contrast to Spokane et al. (2000) and Su et al. (2015), congruence was unexpectedly associated with *reduced* career commitment.

Career Commitment, Overqualification, Career Mobility. Campbell and Hahl (2020) suggest that overqualified men tend to be viewed as less committed to the firms at which they are employed, whilst women who are overqualified for their organisational roles are perceived by their organisation as displaying high levels of career commitment. The narrative of "overqualification" is recognised and even apathetically 'accepted' by South African job seekers who find themselves highly educated (post-graduate degrees) but perpetually unemployed. This reality is especially traumatising for graduates with supposedly "sought-after" qualifications, such as MBA and MBCHB. "L. Gottfredson & Becker (1981) have demonstrated how vocational aspirations are affected by the opportunity structure – which both conditions aspirations to narrow ranges early in life and affects the direction of early career development" (Holland, 1985, p. 129). A curtailed opportunity structure seems to describe the South African reality of "overqualification", a constrained economy and job scarcity. Moreover, Holland (1985) indicates that L Gottfredson and Becker (1981) "… show that the opportunity structure may be more influential than a person's vocational aspiration in determining a person's future occupation" (p. 131). Holland (1985) equates maladaptive career development with an inability to launch a career in a congruent occupation. However, this author recognises that "some persons with consistent and differentiated profiles, and with a clear sense of identity, are unable to find congruent work due to economic or social barriers…and hard times reduce both job opportunities and career assistance resources of all

kinds" (Holland, 1985, p. 137). With the global Covid-19 pandemic in effect, the South African economy has fallen on hard times.

A double-edged sword consolidates the themes advanced by Aguinis and Vandenberg (2014) and Campbell and Hahl (2020). On the one hand, management programme choice can be viewed as a method of rectifying a poor career choice or escaping unsuitable employment. On the other hand, there is the South African employment reality of "overqualification", which precludes highly qualified individuals (with e.g., Master's and Doctoral degrees) from befitting job opportunities.

On a 'design-specific approach', Aguinis and Vandenberg (2014) recommend that researchers should study dependent variables which decision-makers find interesting, as well as independent variables that can be altered through the institution of new policies. The chosen dependent and independent variables of the current study satisfy the authors' recommendation, given the implication of the outcomes of the study which could affect, inter alia, the selection criteria used to place MBA/MBL candidates onto the programme, and employers' recruitment of MBA/MBL graduates with the added advantage of measured vocational behaviour change. Business school and university decision-makers (admissions panel) would find the measured vocational behaviour associated with different academic programmes interesting and insightful. Also, the career commitment finding is interesting for companies which fund the post-graduate management studies of their employees e.g., MBA/MBL. Usually, employers worry about spending money on upskilling their personnel/human capital development, only to have the upskilled graduates flee/leave their organisation. The aforementioned fear of employers was confirmed by the cross-sectional study: congruent management students had reduced career commitment. These students' education could well have been funded by their employers. Their congruence with their academic environment might not be the same in their employment context. That is, these students may have been pursuing management education to escape an unsuitable work environment, hence their measured reduced/low career commitment levels. It is likely that for some respondents their choice of management programme gave them a reprieve from uncomfortable or unsuitable work environments. Thus, it is deduced that these respondents may want to find alternative employment that is as much of a good fit with their vocational personality as their chosen management programme/ academic environment is. Post-graduate management students may view and use management education as an escape ticket, to get away from their organisations.

Still on the theme of "overqualification", Campbell and Hahl (2020) concluded that career commitment is a key factor tied to womens' vocational behaviour (employability). Similarly, the current study revealed career commitment as a significant part of post-graduate management students' vocational behaviour.

Order Effects and Sample Attrition. The value of the repeated measures t-test is that it allows the researcher to establish the extent of the difference that exists between participants' scores before and after the treatment. Harris (1986) warns of order effects, viz., fatigue effect, which is a deterioration of respondents' performance due to boredom and loss of concentration in the event that they become disheartened with the arduous process of being re-assessed (Harris, 1986). Order effects compromised the Phase Two study data collection process and by extension the sample size for the analysis. Most respondents of the Phase One survey demonstrated reluctance to complete the Phase Two survey, despite having initially given their consent to participate in the longitudinal research. The global Covid-19 pandemic also disrupted the initial hard-copy data collection strategy, which had proved to be successful in Phase One. In this regard, all academic institutions across South Africa were forced into Lockdown, prohibiting physical contact between the researcher and potential respondents. As the researcher, I then attempted to collect Phase Two survey data via electronic Qualtrics links and experienced extremely low response rates. The following stressors may help to explain the low response rate and sample attrition regarding the Phase Two survey: students' general fatigue; retrenchment owing to a severely contracted South African economy; problems with online connectivity at home; exhaustion of having to manage post-graduate studies whilst adapting to the "new normal" of working remotely and home-schooling their children; sample attrition owing to students dropping out of their management programmes; stressful life events such as the death or ill-health of loved ones, etc.

5.1.5 Assumptions Common to P-E Fit (Congruence) Theories. The following are examples of assumptions that are common to all P-E fit theories:

- There are consequences attached to the degree of fit between individuals and their work environments (e.g., stress, productivity, satisfaction, turnover, performance), where better fit is associated with favourable outcomes. In the current study a negative albeit significant relationship between career commitment and congruence was found (refer to Table 69); congruent post-graduate management students had low levels of career commitment. Furthermore, the results revealed significant differences in career commitment between

post-graduate Business Management Students and Governance Students. According to the results, incongruent students had significantly higher levels of career commitment than congruent students. The results of the current study revealed that better fit was not necessarily associated with matching (positive) outcomes.

- P-E fit is an on-going and reciprocal process through which people are shaped by their environments, whilst in turn shaping them. P-E fit is integral to career intervention, i.e., decision-making, career planning and adjustment (Su et al., 2015). This statement was supported by the results of the *cross-sectional study*, which showed that P-E fit was differentially associated with a variety of vocational behaviour indicators (e.g., career decision-making self-efficacy; career commitment), within and between the groups of the study.

5.2 Phase Two (Longitudinal Study)

An investigation into the psychological factors that are involved in leader-development is vital in understanding the vocational behaviour of managers and leaders as well as the psychological conditions that precede decision-making within an organisational context. This study examined whether management education could catalyse psychological behaviour change.

Research question 1 of the study, viz., *What is the effect of the MBA/MBL core courses and the Specialised Master's programmes on students' vocational behaviour change?* was addressed. The attendant hypothesis, viz., *H4: Academic environment (management education) changes the levels of post-graduate management students' vocational behaviour indicators*, was tested. Using the the Independent Samples Test (Group difference analysis), significant changes in the five selected vocational behaviour indicators were not observed among the post-graduate management students. Management education did not have a significant effect on their vocational behaviour.The students maintained their vocational behaviour profiles as measured in the Phase One study. This finding suggests that the management programmes were not influential in altering students' vocational behaviour. It may be that the students' vocational behaviour had already stabilised before they embarked on their respective academic programmes. Accordingly, intervention through management education did not alter their vocational behaviour. Seemingly the management programmes (all varieties sampled in this study) are not tailored for imparting psychological resources i.e., vocational behaviour change is not the focus of business and governance schools.

Research question 2 of the study (*What is the effect of congruence (P-E fit) on vocational behaviour change of post-graduate management students in different academic environments?*) was addressed. The attendant hypotheses were tested, viz., H4a: The relationship between academic environment (management education) and vocational behaviour change will be high for congruent management students; H4b: The relationship between academic environment (management education) and vocational behaviour change will be low for incongruent management students. Using the Tests of Between-Subjects Effects to assess the moderating effect of congruence (P-E fit), statistical results on the selected vocational behaviour indicators showed that congruent and incongruent students did not differ significantly i.e., c*ongruence* did not have a significant effect on vocational behaviour. Furthermore, *academic environment* did not significantly impact on vocational behaviour and thus no behavioural change occurred. The Enterprising and Social environments did not differ in their effect on vocational behaviour. The *interaction effect* (Congruence * Academic Environment) was not statistically significant; congruence did not moderate the effect of academic environment on vocational behaviour.

5.2.1 Management Education as a Catalyst for Behaviour Change. Blair et al. (2014), Brown et al. (2016), and Prince et al. (2014) share the view that management education should catalyse behaviour change and that management development interventions affect individuals differently. It was considered that exposure to job-related academic training could catalyse a comparative thinking process within students, who juxtapose their academic learning experience with the practical conditions in their workplace. Contrary to the opinion of the aforementioned authors, results of the current study revealed that management education (business/Enterprising environment and governance/Social environment) did not catalyse change in any of the vocational behaviour indicators amongst the post-graduate students.

In summary, the academic environments operated in the same way i.e., there were no significant differences in the impact of these environments on students' vocational behaviour scores after exposure to the management programme content. Accordingly, the students' level of career decision-making self-efficacy remained high, their career commitment level remained neutral, and their work identity did not change. The results of the survey contradicted the expectation of vocational behaviour change following management education intervention.

5.2.2 Performance of the Phase Two Hypothesised Model. Spokane et al. (2000) call for "more direct tests of the interactive propositions of the theory, and a more appropriate

balance between correlational and experimental designs" (p. 179). Moreover, the authors assert that moderator designs are viewed as a step forward in congruence research. However, the Phase Two study hypothesised model, at the centre of which congruence (P-E fit) is a moderator, was not supported.

> Conceptualized as a contingency hypothesis, moderation can be used to examine the boundaries and limitations of a theory (Boyd, Haynes, Hitt, Bergh, & Ketchen, 2012). In this way, moderation specifies the conditions under which a given theory applies (or not) and thus increases the precision of theoretical predictions (Edwards, 2010) (Andersson et al., 2014, p. 1067).

The Phase Two hypothesised model represented re-imagined relationships between Holland's (1985) variables of congruence (P-E fit), environment and behaviour. It is a model developed by the present researcher and tested on a South African sample of post-graduate management students. Accordingly, congruence was examined as a boundary condition. However, the effect of congruence as a potential moderator of the "academic environment-behaviour change" relationship did not occur.

Su et al. (2015) opine that P-E fit is an on-going and reciprocal process through which people are shaped by their environments, whilst shaping them. Congruence is also integral to career intervention, i.e., decision-making, planning and adjustment. Su et al. (2015) seem to praise congruence as a gateway to positive vocational behaviour outcomes. However, in the current study P-E fit did not have as significant an effect as had been anticipated and vocational behaviour change was not observed.

5.3 Contribution of the study

The following section presents the contribution of the current study as it pertains to theory advancement and clarification. Furthermore, the performance of the hypothesised models for the Phase One and Phase Two study is outlined.

5.3.1 Theory Advancement

Chernyshenko et al. (2019) called for an avid exploration of the manner in which interest congruence affects psychological well-being. In the words of Chernyshenko et al. (2019): "…focusing on interest congruence can dramatically increase the magnitude of relationships and may help to clarify and advance theory" (p. 92). In the current study, vocational behaviour indicators represented "psychological wellbeing" in the career context.

In response to the appeal by Chernyshenko et al. (2019) for a fervent exploration of the relationship between congruence and psychological well-being, the findings of the current study revealed various ways in which congruence and lack thereof (incongruence) was associated with psychological well-being. Within and between group differences amongst Business Management and Governance students were established. Su et al. (2015) differentiate between *perceived fit* (an individual's implicit evaluation of fit i.e., whether or not they feel integrated with their environments) and *objective fit* (operationalisation of fit via assessment and comparing individual variables with environmental ones), arguing that the two might be separate components of the fit construct - given that researchers have found low to moderate correlations between these types of fit (Edwards et al., 2006, as cited in Su et al., 2015). The current study established objective fit by using Discriminant Function Analysis (DA) to operationalise congruence (prediction of academic environment "group membership" based on participants' RIASEC person scores). Congruence theory by Holland (1985) was found to be valid for the Enterprising group (Enterprising personality type). However, the theory was not established for the Social group (Social personality type), as a substantial number of the Social group respondents were found in the E-type environment. The current study (refer to Table 26) revealed that the Enterprising personality type was the best predictor of both the E-type and S-type environments in South Africa.

Antonakis (2017) flags the lack of theory testing (theorrhea) as a disease that plagues the production of useful research. The hypotheses of the current study (in Chapter 1) stem from Holland's Theory (1985) and are also rooted in literature (Chapter 2: Literature Review). The cross-sectional study aimed to test Holland's theory, specifically his fourth working assumption, viz., "Behaviour is determined by an interaction between personality and environment" (Holland, 1985, p. 4). In this regard, Antonakis' (2017) theorrhea was evaded. In line with the views of Sutton and Staw (1995), Antonakis (2017) further argues that theory development requires explanation of phenomena through descriptions of the manner in which variables are causally related, reasons for their connectedness and the boundary conditions encapsulating these relations. Accordingly, the relationships between the variables of the current study were explained and reasons for the connectedness of the variables were provided. The current research holds utility – it is an example of research that matters.

Sutton and Staw (1995) assert that theory development requires the provision of a logical reason why certain empirical relationships are anticipated. Accordingly, the logic underlying the aim of the current study, viz., demonstration that MBA/MBL core courses have

a psychological impact beyond the technical training provided to students, was provided (refer to Chapters 1 and 2). However, it is summarised as follows: Exposure to academic training that is job-related can catalyse a critical thinking within the student, who juxtaposes their academic learning experience with the practical conditions in their current or most recent occupation. The cross-sectional study (Phase One) established the baseline vocational behaviour. A comparison between the Phase One outcome variable (measured baseline vocational behaviour) and the longitudinal study (Phase Two) outcome variable (measured vocational behaviour change) would indicate a function of exposure to management education over time.

Theory Advancement (by way of Contradictory Findings). Following the outcomes of Discriminant Function Analysis (DA) detailed earlier, the Enterprising personality type was the best predictor of both the E-type and S-type environments in the South African context. Holland's (1985) congruence (P-E fit) theory was found to be valid for the Enterprising group i.e., respondents with the Enterprising personality type were associated with the Enterprising academic environment i.e., Business Management programmes. However, the theory was not supported by the Social group, as a substantial number of respondents with the Social personality type were found in the E-type academic environment.

- Assumption: Students' personality type is associated with the academic programme they choose. P-E fit results in positive outcomes for people with vocational personalities that closely match their vocational environments. In this regard Holland (1985) asserts that "Vocational satisfaction, stability, and achievement depend on the congruence between one's personality and the environment in which one works" (p. 10). However, this 'positive outcome' expectation was not consistently confirmed in the current study, as a negative and significant relationship between career commitment and congruence was found. Furthermore, hypothesis testing of the bivariate relationship between congruence and other vocational behaviour indicators did not produce the expected 'favourable' outcomes. Instead, the relationships did not reach significance, resulting in the rejection of H2 (A high level of vocational behaviour is associated with congruence).
- According to Holland (1985), "The content and structure of incongruent interactions…taken together, these negative interactions should result in gross dissatisfaction, ineffective coping behaviour and probably leaving the environment" (pp. 48-49). Contrary to this perspective, within the Governance group, incongruent students had significantly higher levels of career decision-making self-efficacy and a more

pronounced Enterprising interest/personality than congruent students. The current study therefore established that incongruence is not always associated with negative outcomes; similarly, congruence is not always linked to positive outcomes.

- Holland's (1985) fourth working assumption, "Behaviour is determined by an interaction between personality and environment" (p. 4), was not fully supported by the current study. P-E fit did not "predict" vocational behaviour; however, *t*-test results established some significant within and between group differences in vocational behaviour as a function of P-E fit.

5.3.2 Theory Clarification. Responding to the call by Chernyshenko et al. (2019), the current study's exploration of the relationship between congruence and psychological well-being revealed findings which have helped to clarify and advance Holland's Theory of Vocational Personalities and Work Environments in the **South African context**.

Holland's theory (1985) was supported in the following ways:

- "Each model environment attracts its associated personality type" (Holland, 1985, p. 44). There is clarity that Holland's theory of P-E fit (environments attract personalities) found expression in the current study viz., H1a: Enterprising personality type was associated with Enterprising academic environment; and Chi-square result (refer to Table 27 and Table 28).
- Post-graduate management programmes were differentially associated with RIASEC interest/personality types.
- Holland (1985) argues that "each environment repels some types more than others" (p. 44). The following finding accords with Holland's sentiment on repelling environments: within the Governance group, incongruent students had significantly higher levels of career decision-making self-efficacy and higher Enterprising interest/personality scores than congruent students.
- Abilities and competencies: "Different types have developed different kinds of abilities and competencies, and these differences correspond in a diffuse way to the demands of the occupation a particular type engages in" (Holland, 1985, p. 69). All academic programmes (Business Management and Governance groups) had their own learning outcomes and competency requirements for their admitted students. This accords with Holland's perspective on abilities and competencies. Furthermore, the current study revealed measured vocational behaviour that was associated with Business Management and Governance post-graduate students. It was therefore considered that different types of

students (with their respective abilities and competencies) stand to benefit from suitable academic environments (management programmes) that appeal, inter alia, to their vocational personalities.

- "In addition, closely related types (adjacent on the hexagon) tend to share similar competencies" (Holland, 1985, p. 70). This perspective explains the result that a significant percentage of respondents with the Social personality type were found in the E-type environment (Business Management programme). It also supports the suggestion that Governance is partly as much of an Enterprising activity as it is a Social one. It follows that Management 'as a skillset' (competency) may be shared by both Business Management students (largely E-type) and Governance students (typically S-type) and applied in their respective organisations/employment sectors.

The discussion above reveals the manner in which the hypothesised model (Phase One) operates within the South African context. Specifically, it highlights the extent to which Holland's Typology (1985) (P-E fit assumptions) was supported by the sample of post-graduate management students. It also exposes the shortfalls of the theory in describing the behaviour of South African post-graduate management students. The discussion above also reveals that the Phase Two hypothesised model was not supported by the sample of post-graduate management students. Accordingly, there were no significant differences in the impact of academic environments on students' vocational behaviour scores after exposure to the management programme content. The limitations of the study are discussed below.

5.4 On the Potential Generalisability of the Study

The researcher considered that findings might only be extrapolated to a sub-group of the population that is similar to the sample, i.e., South African post-graduate management education students and graduates viz., MBA/MBL and Specialised Master's, from business and governance schools of universities that are comparable to those targeted by this study in terms of selection criteria used to admit students onto the academic programmes, international accreditation status and academic rigour. Furthermore, the generalisability of the findings could be enhanced if it were found that the hypothesised model of the Phase Two study operated in a similar way across different groups of post-graduate management students. In the current study, exposure to management education did not lead to changes in students' vocational behaviour. Furthermore, congruence (P-E fit) did not moderate the effect of academic

environment on the vocational behaviour of the students. In this regard, the hypothesised model for the Phase Two study was not supported. This finding is still important for researchers and theorists as the Phase Two study hypothesised model is an original model which could benefit from being tested using a large sample (more specifically an identical sample at Time 1 and Time 2 data collection phases).

5.5 Practical Implications

Given the Phase Two study outcomes, it behoves the schools of business and governance to incorporate the psychological dimension in management education to enhance managers' vocational behaviour and optimise achievement of organisational goals. In addition to skills development, management education should include a psychological component that would enhance students' vocational behaviour. *Educated, experienced and psychologically well-adjusted* managers and *leaders* are the heartbeat of effective organisations and catalyse employee morale. It is important to know the psychological "make-up" of managers with regard to their vocational behaviour. Accordingly, investigation into the psychological factors that are involved in leader-development remains an important endeavour in understanding the career behaviour of managers and leaders as well as the psychological conditions that precede decision-making within an organisational/vocational context. Therefore, Kanter's (2003) article titled "Leadership and the psychology of turnarounds", which detailed elements of psychology that are part of leaders' corporate turnaround strategies, is dissected in relation to the current doctoral study. According to Kanter (2003) Turnaround leaders maintain a positive and proactive attitude that challenges organisational pathologies by galvanizing employees and organisational resources to positively and sustainably change the trajectory of an ailing and ineffective organization. The psychological "make-up" of turnaround leaders includes the following characteristics: an affinity to realism/pragmatism rather than Pluralistic ignorance (collective denial amongst organisational members); encouraging participative management as an employee empowerment strategy; optimism, social calibration and situational awareness (rather than social withdrawal); an affinity to exercising agency/taking initiative and autonomous behaviour rather than learned helplessness; respect for the importance and transmission of institutional memory (vital resources to empower employees); and prioritizing the development of organisational esteem and confidence (Kanter, 2003).

The psychological make-up of Turnaround leaders allows them to counteract the following phenomena that plague organisations (Kanter, 2003): Erosion of mutual respect/social cohesion amongst employees; scepticism and cynicism; an organisational culture of deception; toxic blame games (counterproductive work behaviour); lack of fairness (when certain employees/departments are favoured more than others); ceremonial conformity (when the internal reality of an organisation is the direct opposite of the public's perception of the same organisation); high power distance; hyper competitiveness; self-preservation at the expense of others; manipulation of performance targets and a proliferation of silos, viz., disjointed organizational departments and lack of collaboration.

When contextualizing Kanter's (2003) article in relation to the current study, the psychological conditions that precede decision-making within an organisational/vocational context are reflected in "The Troubled Company's Cycle of Decline". According to Kanter (2003) "The Troubled Company's Cycle of Decline" includes the following organisational behaviour that occurs in a downward spiral: secrecy and denial, blame and scorn, avoidance and turf protection, as well as passivity and helplessness. Turnaround leaders can reverse the pathological cycle by applying various interventions (Kanter, 2003). In the context of the current study, turnaround strategies represent the career behaviour of managers and leaders who are required to catalyse corporate turnaround. The following section outlines turnaround interventions to reverse organisational pathologies:

Promoting dialogue: this involves prioritizing transparency within the organisation by opening communication channels from the apex of the organisation to the bottom. This may include exposing employees' performance data as a way to do away with a culture of mediocrity. This intervention gives voice to employees who feel marginalized and would remain so if participative management were not prioritized by turnaround leaders. Additionally, Kanter (2003) praises the positive psychological effect that kind and gentle leaders have on the self-esteem and enthusiasm of employees.

Engendering respect: respect and relationship management are central to corporate turnaround. According to Kanter (2003) turnaround leaders must catalyse a culture of respect amongst employees; arguing that people tend to collaborate peacefully when their abilities and project contributions are acknowledged and respected by fellow colleagues. Engendering respect is also linked to the way employees' performance feedback is delivered. Kanter (2003) maintains that feedback should have a human touch, not be punitive but also be realistic enough so that employees are not left in denial. Turnaround leaders that encourage their employees to display their talent (e.g., identifying new products or service streams for improved profits),

boost the confidence of their employees and show their value to the organisation (Kanter, 2003).

Sparking collaboration: this involves eliminating unhealthy and counterproductive hyper competitiveness amongst senior staff and between departments and divisions within the organisation. This intervention involves normalizing informal and relaxed social interactions where chatty meetings and fun team-building events are prioritized. Turnaround leaders set companies on a winning trajectory by encouraging employees to have new conversations about the various ways in which organizational resources and assets can be combined in new ways (Kanter, 2003). Turnaround leaders introduce temporary teams to open relationships; they strive to move employees closer to having discussions that are 'more productive'.

Inspiring initiative: Kanter (2003) maintains that turnaround leaders set the scene for employee collaboration and try to empower their workers to achieve organisational strategic goals (e.g., improved financial status). Inspiring initiative requires challenging learned helplessness (employee apathy). Kanter (2003) suggests that turnaround leaders empower their followers to achieve by providing them with expert resources, frameworks and customer information

The energy for change: Kanter (2003) asserts that leading corporate turnaround is a dynamic and iterative process that is context-specific (not one-size-fits-all). This requires each turnaround leader to advance their unique turnaround strategy. Ultimately, the common denominator for turnaround interventions is sustainable restoration of employee confidence via empowerment. Leaders must replace denial with dialogue, apathy with initiative, isolation with collaboration and blame with respect (Kanter 2003).

It is recognised that within an organisation there will be employees of different vocational personalities, including those whose personalities are incongruent with the work environment. In this regard, **best management practices** will require flexibility on the part of leaders and an effort to identify incompatible employees and 'win them over'. Gaining the favour of incongruent employees might take the practical form of strategically restructuring the organisation's Employee Value Proposition to capture the interest of incongruent employees and thereby promote employee retention.

Whilst the current study found no significant differences in the impact of academic environments on students' vocational behaviour scores after exposure to the management programme content; managers will remain confronted with psychological phenomena at work. **Best management practices** will require managers to critically examine their organisations in terms of employee behaviour that results in strategic goal achievement and behaviour that stalls

progress. They should go a step further to educate themselves about positive and negative psychological phenomena that plague organisations so that anomalies can be speedily identified and tackled. Conversely, progressive behaviour should be rewarded and repeated.

Best management practices should involve leaders and managers highlighting the merits of diversity. Ideally, cross-functional teams and groups working on intrapreneurial projects should be composed of employees with different vocational personality types. This practice of diversifying the groups is bound to result in creative outcomes as each vocational personality brings with it specialised knowledge (e.g., Marketing, Finance, HR specialists) and a different frame of reference/outlook on organisational life. Additionally, **best management practices** that can be extracted from the current study include encouraging employees from divergent departments or divisions to share their ideas regarding how they perceive other departments; could improve their strategic outcomes. Sharing templates, databases, tools and tips across functions; as well as joining and contributing to project teams that they would ordinarily avoid, will impart learning to individuals in the groups. This is in recognition that different personality types bring different talent, strategies, schemas and vigour to the table.

5.6 Limitations of the Study

The Phase Two sample size was plagued by severe attrition that may have obscured potential detail in the vocational behaviour of the post-graduate management students. Therefore, the Phase Two study outcomes cannot be viewed as being entirely representative of post-graduate management students across South Africa, given that this sub-sample was only a fraction (29%) of the sample that participated in the Phase One (cross-sectional) study. Not all South African Business and Governance Schools were targeted in the study. Future studies should include most Business and Governance Schools in South Africa to ensure the generalizability of the outcomes of the study.

Manual data collection was highly effective as evidenced by the relatively high response rate in Phase One of the study. On the other hand, data collection via electronic Qualtrics links was problematic as respondents ignored requests to participate in the Phase Two study. However, due to the global Covid-19 pandemic, it is likely that research projects will need to adopt remote/online data gathering strategies. Incentives for student participation were not provided during the two phases of data collection for the study. Incentives may have boosted the Phase Two study response rate, which was low. Therefore, future research projects

could benefit from pairing remote data collection methods with incentives to attract and sustain research participation.

The following additional limitation of the study has been identified: While this study focused on post-graduate management education, it is however, considered that post-graduate studies in general have the impact of improving/increasing individuals' career prospects. Organisations contest for talent; those with post-graduate qualifications are a preferred choice for employers. This view also applies to head-hunted individuals.

5.7 Conclusion of the Study and Direction for Future Research

The Phase One and Phase Two hypothesised models should be tested using large samples. The research should be carried out at a national level, across all universities, business and governance schools. Research funding would be required to execute this project on such a large scale.

Expansion of future directions for research by way of interventions: A consideration of other interventions (besides management education) that could potentially enhance peoples' vocational behaviour is presented below:

Enhancing the Career Commitment of women who would take a different job from their current one, who wish they could reverse their decision to join their current vocation; and women who have been disappointed since entering their vocation.

Intervention: The "Glass Cliff" disempowers working women because coworkers may encourage the upward mobility of an Agentic woman, with the intention of witnessing her failure in a leadership role, effectively orchestrating her humiliation by slashing her reputation as a capable individual. To remedy this phenomenon, one could develop a training workshop based on "Dialectical thinking". Dialectical thinking denotes a cognitive style wherein an individual perceives the world as being 'interconnected and in flux'. Dialectical thinkers can accommodate inconsistencies within their environments and as such may have a higher frustration tolerance for contradictory information (Hideg & Ferris, 2017). The workshop would prime working women to scan their environment for threats and opportunities; and reflect on the manner in which their behaviour affects co-workers and vice versa. This strategic mind-set shift may help trailblazing women to preserve their psychological wellbeing when facing resistance at the apex of the organisation; and avoid pursuing leadership roles at all costs (i.e., to their detriment).

Enhancing the Work Identity of women who view their work as the determinant of their value as a person; those who base their entire identity on their job; those who perceive that their job prevents them from becoming themselves or who they want to be; and those who feel embarrassed when the media criticizes the organisation they work for.

Intervention: For highly-educated women who might suffer from "imposter syndrome" (psychological self-doubt of one's accomplishments plus a fear of being exposed as inauthentic), one could introduce an assertiveness training workshop (based on self-efficacy) to bolster their self-esteem and help to consolidate a positive work identity. As part of a career development service, one could conduct focus groups, which would encourage discussion amongst women about the various ways in which they feel unprepared for some aspects of their roles. The concept of self-efficacy would be explained as part of the intervention. The solution would help women to focus on the parts of their jobs for which they view themselves as being capable and successful. This intervention would force women to introspect on their personal qualities, which enable them to succeed at what they do. By redirecting the attention of women afflicted by the imposter syndrome, to their perceived self-efficacy (the extent to which individuals feel that they can successfully complete the tasks they are given), one could help to reduce women's levels of stress and self-doubt. The anonymous data collected via the focus groups would be reported in a document, to be presented to the top leadership structure by an Industrial/Organisational Psychologist, for purposes of informing the organisation's strategy on human capital development.

Enhancing the Career Decision-Making Self-Efficacy of women who need to select one occupation amongst a list of several prospects; those who need to determine what their ideal job would be; make a career choice that is in keeping with their preferred lifestyle; and identify employers, firms and institutions that are relevant to their career prospects.

Intervention: The empowerment of women in the workplace within the 4th Industrial Revolution must focus on the 'preservation of women's employability'. Here, education is vital because even women with physical disabilities would remain competitive in positions requiring mental rather than physical labour. As an Industrial/Organisational Psychologist, I perceive that many occupations have become permeable, where once relatively "secure/contained" occupations (e.g., beauty industry/fashion blogging/food styling/product reviews) have been infiltrated by the masses. We may accredit this to 'Ubiquitous' and 'vicarious learning' through platforms like YouTube. I recommend that women must be empowered with hard-to-get

skills/professional training which requires high levels of conceptual reasoning ability and high order modes of apperception, rather than learning by observation alone. The selection of women to receive the training should be based, inter alia, on psychometric assessment to determine their aptitude (learning potential) for strategic roles. Amassing a set of scarce skills would give women strategic power and influence at work, as they would make significant contributions and be well-informed regarding organisational processes, people, projects and products

Women in white-collar positions tend to benefit from the organisation's career development services, whilst blue-collar workers rarely enjoy such privileges. It is perceived that there are workers of the semi-skilled or unskilled categories (security staff, cleaners, cooks) who could benefit from on-the-job training interventions. The Industrial Test Battery (ITB) is a psychometric instrument that was designed for and profiles the reasoning ability of blue-collar South African workers. This test would enable Industrial/Organisational Psychologists to assess and identify individuals who would be candidates for on-the-job training. Furthermore, the perception that women at all levels in the organisation stand to benefit from career development initiatives would be highlighted.

Enhancing the Vocational Identity of women who are uncertain about the occupations they could perform well; those who do not know what their major strengths and weaknesses are; those who are confused about their career choice; women who are insecure about themselves in many areas of their life; and those who cannot understand how other people are so decisive.

Intervention: The "Glass Ceiling" (an invisible roof limiting the upward mobility of women competing for leadership roles) is disempowering. In recognition of a general resistance to women in positions of power, I would initiate a cross-firm women's forum in which women from different organisations could congregate for discussions on how to break through the glass ceiling. This self-empowerment strategy would highlight ideas such as the development of "Agentic qualities" (commanding attention, decisiveness, autonomy, assertiveness, being influential, competent and methodical in behaviour); and "The Female Leadership Advantage" (a description of women with a mixture of agentic and communal characteristics, who reach the zenith of their organisations). These are the female initiators, perceived by their co-workers (subordinates and managers alike) as demonstrating efficacy in their leadership roles and traversing the glass ceiling. The recommended forum would serve to promote problem-solving

through collaboration; the sharing of ideas and experiences (as an effort to establish empathy amongst women); and creating a sense of accountability (rather than apathy) for one's career development.

Expansion of future directions for research: It is considered that besides vocational behaviour, there are other variables that could be affected by post-graduate management education. The following section gives an account of such variables, viz., improving profitability, technology reinforcement, risk management and international standards.

Improving profitability: post-graduate management education that exposes students to South African business needs and orientates them to the South African economic climate, is likely to sensitize graduates to the skills gap/miss-match that confronts many graduates as they enter the workplace. Managers who are trained in highly ranked institutions tend to be favoured by employers. High potential, flexible graduates with hard and soft skills and an interest in upskilling themselves may help boost the profitability of their organisations through strategic knowledge acquisition and application. Effective managers should be able to administer technical and human resources to achieve the organisation's objectives. Managers with an entrepreneurial streak may identify ways for their organisation to gain more market share in a competitive environment. Individuals who know their strengths (e.g., being a strategist vs. an implementer) can situate themselves appropriately during project management to save the organisation from overspending and duplication of effort. This would help to preserve financial resources and improve profitability in the organisation.

Reinforcing technology: with the introduction of the 4th industrial revolution, the internet of things and block-chain (an electronic, crystalized record-keeping system that is resistant to hacking); organisational roles in technology abound, for example: Coding, Data-base Design and Administration, Computer Network and System Engineering, Telecommunications Network Engineering, Management Consulting (Business Analyst), Web Technicians and ICT Systems Analysis. University graduates and post-graduate management students who receive education that introduces them to technologically-based resources, will have an advantage over co-workers who are not skilled or oriented to information technology (IT) developments in industry. Technology is likely to be further developed and reinforced by people who have received training in that regard and are interested in expanding their practical and academic knowledge. Knowledge sharing by those with technical IT resources and skills may help organisations to foster a unique IT culture, thereby enabling the organisation to

compete with other tech-savvy institutions in the external environment. Post-graduate management education that includes the following may be impactful in reinforcing technology: systems/business simulation courses (realistic, interactive experiential learning in a risk-free setting); modules in innovation; computer programming; and statistics.

Risk management: MBA education including training in Finance as a functional area of business, when paired with a Fund Manager's work experience may serve to enhance such an individual's expertise in the management of investments. The skilled and astute investor or fund manager may be expected to accurately analyse and quantify potential investment losses and act to counteract outcomes that are not commensurate with the fund's investment goals. Fund managers may face the risk of practicing counterproductive work behaviour (e.g., displaying inefficiency, destruction or underperformance). In this regard, academic modules that focus on Business Ethics may sensitise fund managers to ethical dilemmas associated with their professional work; thereby sharpening their vigilance when assessing/forecasting market trends for investment opportunities.

Applying international standards: the course content of any competitive management education programme (e.g., MBA or Specialised Masters) is frequently monitored and updated according to academic research trends as well as developments within the Private and Public Sectors of the countries/economies in which such programmes are located. There tends to be a collective effort amongst institutions to mirror high standards of education across the world. A simple example is the ranking of Top Universities or Business Schools and the criteria used for profiling the institutions. In South Africa, it is common for prospective students to ascertain the international recognition (status) of their target institutions including the quality of the academic programmes they intend to gain admission into. MBA programmes usually have an international component (e.g., a course elective to be taken in Canada or China). It is thus not farfetched to conclude that students who are exposed to international business trends, economies, education, co-workers or fellow students, would consolidate all such influences as part of their management schema/toolkit and apply the international standards to their practice as managers within their countries of origin and internationally. Lastly, highly-educated graduates take pride in being well-informed and "ahead-of-the-pack", with regard to global economic trends, geo-political and technological trends. It therefore makes sense that such individuals would gravitate towards, uphold and apply international standards in their workplace.

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Appendix A: Participant Informed Consent Form and Measuring Instruments

Faculty of Economic and Management Sciences

Department of Human Resource Management
University of Pretoria
Assessing the effect of post-graduate management education on vocational behaviour

Research conducted by: Ms. LM Tabane (u16398859) Cell: 0799777696

Participant informed consent form – Phase 1

Dear post-graduate management student

The purpose of this study is to investigate the change in career interests and to examine the change in vocational behavior of individuals enrolled in different post-graduate management programs. In order to examine change, we need to collect data from post-graduate management students at two points in time. We request that you agree to complete both questionnaires, of which this is the first.

Your participation in this study is very important and requires that set aside 15-20 minutes to complete this questionnaire. Since we are interested in measuring aggregate change in individual behavior, we are asking for your personal email address, so that we can link the first survey results with the second survey. All the information received will be analyzed collectively, and no personal information will be used in the study. The personal information is only requested for the purpose of linking the first phase data with that of the second phase, and will be kept confidential. Another reason for asking for personal information is that the study leader(s) may wish to contact respondents to verify the authenticity of data gathered by the researcher.

If you choose not to participate or if you need to stop participating at any time, there will not be any negative consequences for you. The results of the study will be used for academic purposes only and may be published in an academic journal.

Please contact my study leader, Prof Arien Strasheim (082 8875180; arien.strasheim@gmail.com) and/or Prof Alewyn Nel (+27 (0)124203434; alewyn.nel@up.ac.za) if you have any questions or comments regarding the study.

Please sign on the line below to indicate that: **You give your consent for participation in my Doctoral study**:

Participant signature_____
Date_____

Q1 Please provide your email address in the space below (This information will not be used to track your identity, but to help the researcher link phase 1 data to phase 2 data)

Q2 Please indicate the ways in which you anticipate your current academic programme will affect your career?

Q3	**This list of 30 activities that are performed in different jobs is useful to determine your career interests. Please note that there are no correct or incorrect answers. Please indicate your personal preference for each of the activities mentioned below by circling your choice.**	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	Do routine maintenance of machines.	1	2	3	4	5
2	Fix a car engine.	1	2	3	4	5
3	Install wires in a house.	1	2	3	4	5
4	Operate heavy machinery.	1	2	3	4	5
5	Weld metal parts together.	1	2	3	4	5
6	Conduct scientific experiments.	1	2	3	4	5
7	Develop new medicines in a laboratory.	1	2	3	4	5
8	Research ancient monuments.	1	2	3	4	5
9	Study insects in a laboratory.	1	2	3	4	5
10	Study minerals in the ground.	1	2	3	4	5
11	Act in a play.	1	2	3	4	5
12	Paint a picture.	1	2	3	4	5
13	Play a musical instrument.	1	2	3	4	5
14	Write a book.	1	2	3	4	5
15	Write poetry.	1	2	3	4	5
16	Counsel people to help them deal with their problems.	1	2	3	4	5
17	Host a charity event.	1	2	3	4	5
18	Look after children.	1	2	3	4	5
19	Teach at a school.	1	2	3	4	5
20	Teach people life skills.	1	2	3	4	5
21	Increase efficacy of a business.	1	2	3	4	5
22	Manage a business.	1	2	3	4	5
23	Manage a marketing department.	1	2	3	4	5
24	Mentor staff at a company.	1	2	3	4	5
25	Negotiate salaries on behalf of people.	1	2	3	4	5
26	Archive documents for a company.	1	2	3	4	5
27	Calculate wages and salaries of employees.	1	2	3	4	5
28	Monitor the accounts of a company.	1	2	3	4	5
29	Order office supplies.	1	2	3	4	5
30	Organise transportation of products from a factory.	1	2	3	4	5

Q4 For the following statements, answer TRUE if it is mostly true for you and FALSE if it is mostly false for you.

	In thinking about your present job or in planning for an occupation or career:	**TRUE**	**FALSE**
1	I need reassurance that I have made the right choice of occupation.	1	2
2	I am concerned that my present interests may change over the years.	1	2
3	I am uncertain about the occupations I could perform well.	1	2
4	I don't know what my major strengths and weaknesses are.	1	2
5	The jobs I can do may not pay enough to live the kind of life I want.	1	2
6	If I had to make an occupational choice right now, I'm afraid I would make a bad choice.	1	2
7	I need to find out what kind of career I should follow.	1	2
8	Making up my mind about a career has been a long and difficult problem for me.	1	2
9	I am confused about the whole problem of deciding on a career.	1	2
10	I am not sure that my present occupational choice or job is right for me.	1	2
11	I don't know enough about what workers do in various occupations.	1	2
12	No single occupation appeals strongly to me.	1	2
13	I am uncertain about which occupation I would enjoy.	1	2
14	I would like to increase the number of occupations I could consider.	1	2
15	My estimates of my abilities and talents vary a lot from year to year.	1	2
16	I am not sure of myself in many areas of life.	1	2
17	I have known what occupation I want to follow for less than one year.	1	2
18	I can't understand how some people can be so set about what they want to do.	1	2

Q5	**Currently for my career I need the following information:**	**YES**	**NO**
1	How to find a job in my chosen career.	1	2
2	What kinds of people enter different occupations.	1	2
3	More information about employment opportunities.	1	2
4	How to get the necessary training in my chosen career.	1	2

Q6	Currently for my career, I have the following difficulties:	YES	NO
1	I am uncertain about my ability to finish the necessary education or training.	1	2
2	I don't have the money to follow the career I want most.	1	2
3	I lack the special talents to follow my first choice.	1	2
4	An influential person in my life does not approve of my vocational choice.	1	2

Q7	Please indicate how much confidence you have that you could accomplish each of these tasks.	No confidence at all	Very little confidence	Moderate confidence	Much confidence	Complete confidence
1	Find information in the library about occupations you are interested in.	1	2	3	4	5
2	Select one management programme from a list of potential management programmes you are considering.	1	2	3	4	5
3	Make a plan of your goals for the next five years.	1	2	3	4	5
4	Determine the steps to take if you are having academic trouble with an aspect of your chosen management programme.	1	2	3	4	5
5	Accurately assess your abilities.	1	2	3	4	5
6	Select one occupation from a list of potential occupations you are considering.	1	2	3	4	5
7	Determine the steps you need to take to successfully complete your chosen management programme.	1	2	3	4	5
8	Persistently work at your management programme or career goal even when you get frustrated.	1	2	3	4	5
9	Determine what your idea job would be.	1	2	3	4	5
10	Find out the employment trends for an occupation over the next ten years.	1	2	3	4	5
11	Choose a career that will fit your preferred lifestyle.	1	2	3	4	5

12	Prepare a good resume.	1	2	3	4	5
13	Change management programmes if you did not like your first choice.	1	2	3	4	5
14	Decide what you value most in an occupation.	1	2	3	4	5
15	Find out about the average yearly earnings of people in an occupation.	1	2	3	4	5
16	Make a career decision and then not worry about whether it was right or wrong.	1	2	3	4	5
17	Change occupations if you are not satisfied with the one you enter.	1	2	3	4	5
18	Figure out what you are or are not ready to sacrifice to achieve your career goals.	1	2	3	4	5
19	Talk with a person already employed in the field you are interested in.	1	2	3	4	5
20	Choose a management programme or career that will fit your interests.	1	2	3	4	5
21	Identify employers, firms, institutions relevant to your career possibilities.	1	2	3	4	5
22	Define the type of lifestyle you would like to have.	1	2	3	4	5
23	Find information about graduate or professional schools.	1	2	3	4	5
24	Successfully manage the job interview process.	1	2	3	4	5
25	Identify some reasonable management programme or career alternatives if you are unable to get your first choice.	1	2	3	4	5

Q8	**Please answer the following questions**	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	I would take a different job that paid the same.	1	2	3	4	5
2	I want a career in this vocation.	1	2	3	4	5
3	If I could do it all over, I would not choose this vocation.	1	2	3	4	5
4	If I had all the money I needed, I would still want to be in this vocation.	1	2	3	4	5

5	I enjoy my vocation too much to give it up.	1	2	3	4	5
6	This is my ideal vocation for my life work.	1	2	3	4	5
7	I've been disappointed ever since I entered this vocation.	1	2	3	4	5

Q9 **Please indicate the degree to which the questions below accurately describe your own situation and feelings**.

1. How much meaning does work add to your life?

Little meaning	1	2	3	4	5	6	7	Much meaning

2. To what extent do you regard work as the most important aspect in your life?

To no extent	1	2	3	4	5	6	7	To a very large extent

3. How much does your work determine your value as a person?

Not at all	1	2	3	4	5	6	7	All of it

4. How valued are people, based on their contribution to work?

Not valued at all	1	2	3	4	5	6	7	Highly valued

5. How much is your own identity based on your job?

Nothing at all	1	2	3	4	5	6	7	Very much

6. How "lost" would you be without your job?

Very lost	1	2	3	4	5	6	7	Not lost at all

7. To what extent is your occupation the most important activity in your life?

To no extent	1	2	3	4	5	6	7	To a very large extent

8. To what degree do you base the best description of 'who you are' on your career?

To no degree	1	2	3	4	5	6	7	To a very large degree

9. To what extent would your life be valueless without your job?

To no extent	1	2	3	4	5	6	7	To a very large extent

10. How central does the organisation that you work for stand in your life?

Not central at all	1	2	3	4	5	6	7	Very central

11. To what degree do you see yourself as part of the organisation that you work for?

To no degree	1	2	3	4	5	6	7	To a very large degree

12. How much is the best description of "who you are" related to your involvement in the organisation that you work for?

Not related at all	1	2	3	4	5	6	7	Highly related

13. It is assumed that the standards of your job are high. How easily can you identify with these high standards of your job?

Not at all	1	2	3	4	5	6	7	Very easily

14. How much does your job prevent you from being yourself or becoming who you want to be?

Very much	1	2	3	4	5	6	7	Not at all

15. To what extent does your job allow for the achievement of personal goals?

To no extent	1	2	3	4	5	6	7	To a high extent

16. How rewarding is work in itself as an activity?

Not rewarding at all	1	2	3	4	5	6	7	Highly rewarding

17. How much do you see your job as your whole life?

Very little	1	2	3	4	5	6	7	Very much

18. How much of your identity is based on your occupation?

Very little	1	2	3	4	5	6	7	Very much

19. How directly related are all your achievements to your job?

Not related at all	1	2	3	4	5	6	7	Fully related

20. How much do you give to your job?

I do not give anything	1	2	3	4	5	6	7	I give everything

21. How likely are you to regard your work as only a small part of who you are?

Very likely	1	2	3	4	5	6	7	Very unlikely

22. To what extent do you know yourself?

To no extent	1	2	3	4	5	6	7	To a very large extent

23. To what degree are you at peace with your self-identity?

To no degree	1	2	3	4	5	6	7	To a very large degree

24. To what extent do you feel that your work values and beliefs reflect who you are?

To no extent	1	2	3	4	5	6	7	To a very large extent

25. How clear is your future vision of yourself?

Not clear at all	1	2	3	4	5	6	7	Very clear

26. Do you have a good idea of what your future holds for you?

No idea at all	1	2	3	4	5	6	7	Very clear idea

27. To what degree do your values match or fit the values of the organisation that you work for?

To no degree	1	2	3	4	5	6	7	To a very large degree

28. To what degree are you able to maintain your values at the organisation that you work for?

To no degree	1	2	3	4	5	6	7	To a very large degree

29. To what extent does the difference between your values and those of the organisation that you work for prevent you from fitting in?

To no extent	1	2	3	4	5	6	7	To a great extent

30. Does it feel like a personal accomplishment when someone praises the organisation that you work for?

Never	1	2	3	4	5	6	7	Always

31. How often do you say 'we' rather than 'they' when you talk about the organisation that you work for?

Never	1	2	3	4	5	6	7	Always

32. How interested are you in what others think about the organisation that you work for?

Not interested	1	2	3	4	5	6	7	Very interested

33. How much do you consider the organisation's successes as your own?

No consideration	1	2	3	4	5	6	7	Very high consideration

34. How personally insulted do you feel when someone criticizes the organisation that you work for?

Not insulted at all	1	2	3	4	5	6	7	Very insulted

35. How embarrassed do you feel when the media criticizes the organisation that you work for?

Not at all	1	2	3	4	5	6	7	Very embarrassed

36. How much of your interest is outside the organisation that you work for?

No interest	1	2	3	4	5	6	7	All interest

Demographic questions

Q10 Please indicate your gender

Male	Female
1	2

Q11 Please indicate your current age in years

Q12 Please indicate your home language(s)

English	Afrikaans	IsiNdebele	IsiXhosa	IsiZulu	Sepedi	Sesotho	Setswana	SiSwati	Tshivenda	Xitsonga
1	2	3	4	5	6	7	8	9	10	11
Other – please specify										

Q13 Please indicate your ethnicity

African	White	Coloured	Indian	Other	Please specify
1	2	3	4	5	

Q14 Briefly describe your current (or most recent occupation)

Q15 Please indicate your current position in your organization / or your job level/status

Junior management	Middle-management	Senior management	C-Suite	Partner	Other – please specify
1	2	3	4	5	

Q16 Highest qualification obtained

Matric / Grade 12	Diploma	Bachelors Degree	Honours Degree	Masters Degree	PhD
1	2	3	4	5	6

Q17 Please indicate the total number of years of your work experience

0-5	5-10	11-20	21-30	31-40	40+
1	2	3	4	5	6

Q18 Employment Industry/Sector

Accountancy, Banking & Finance	Business, Consulting & Management	Engineering & Manufacturing	Energy	Environment & Agriculture	Healthcare	Hospitality & Events Management
1	2	3	4	5	6	7

Information Technology	Marketing, Advertising & PR	Science & Pharmaceuticals	Transport & Logistics	Recruitment & HR	Leisure, Sport & Tourism	Creative Arts & Design
8	9	10	11	12	13	14

Q19 If you have not provided your email address in Q1, please provide any unique name or code or your email address or cellphone number in the space below. When we conduct the follow-up study, we will need this information to link phase 1 data with phase 2 data)

Q20 Please share your career plans immediately after you have completed your degree.

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Economic and Management Sciences

Department of Human Resource Management
University of Pretoria
Assessing the effect of post-graduate management education on vocational behaviour

Research conducted by: Ms. LM Tabane (u16398859) Cell: 0799777696

Participant informed consent form – Phase 2

Dear post-graduate management student

The purpose of this study is to investigate the change in career interests and to examine the change in vocational behavior of individuals enrolled in different post-graduate management programmes. In order to examine change, we need to collect data from post-graduate management students at two points in time. We request that you agree to complete both questionnaires, of which this is the second.

Your participation in this study is very important and requires that you set aside 15-20 minutes to complete this questionnaire. Since we are interested in measuring aggregate change in individual behavior, we are asking for your personal email address, so that we can link the first survey results with the second survey. All the information received will be analysed collectively, and no personal information will be used in the study. The personal information is only requested for the purpose of linking the first phase data with that of the second phase, and will be kept confidential. Another reason for asking personal information is that the study leader(s) may wish to contact respondents to verify the authenticity of data gathered by the researcher.

If you choose not to participate or if you feel you need to stop participating at any time, there will not be any negative consequences for you. The results of the study will be used for academic purposes only and may be published in an academic journal.

Please contact my study leader, Prof Arien Strasheim (082 8875180; arien.strasheim@gmail.com) and/or Prof Alewyn Nel (+27 (0)124203434; alewyn.nel@up.ac.za) if you have any questions or comments regarding the study.

Please sign on the line below to indicate that: **You give your consent for participation in my Doctoral study**:

Participant signature_____
Date_____

Q1 Please provide your email address in the space below (This information will not be used to track your identity, but to help the researcher link phase 1 data to phase 2 data)

Q2 Now that you are 6-months into your academic programme, please indicate what impact it has had on your career?

Q3	**This list of 30 activities that are performed in different jobs is useful to determine your career interests. Please note that there are no correct or incorrect answers. Please indicate your personal preference for each of the activities mentioned below by circling your choice.**	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	Do routine maintenance of machines.	1	2	3	4	5
2	Fix a car engine.	1	2	3	4	5
3	Install wires in a house.	1	2	3	4	5
4	Operate heavy machinery.	1	2	3	4	5
5	Weld metal parts together.	1	2	3	4	5
6	Conduct scientific experiments.	1	2	3	4	5
7	Develop new medicines in a laboratory.	1	2	3	4	5
8	Research ancient monuments.	1	2	3	4	5
9	Study insects in a laboratory.	1	2	3	4	5
10	Study minerals in the ground.	1	2	3	4	5
11	Act in a play.	1	2	3	4	5
12	Paint a picture.	1	2	3	4	5
13	Play a musical instrument.	1	2	3	4	5
14	Write a book.	1	2	3	4	5
15	Write poetry.	1	2	3	4	5
16	Counsel people to help them deal with their problems.	1	2	3	4	5
17	Host a charity event.	1	2	3	4	5
18	Look after children.	1	2	3	4	5
19	Teach at a school.	1	2	3	4	5
20	Teach people life skills.	1	2	3	4	5
21	Increase efficacy of a business.	1	2	3	4	5
22	Manage a business.	1	2	3	4	5
23	Manage a marketing department.	1	2	3	4	5
24	Mentor staff at a company.	1	2	3	4	5
25	Negotiate salaries on behalf of people.	1	2	3	4	5
26	Archive documents for a company.	1	2	3	4	5
27	Calculate wages and salaries of employees.	1	2	3	4	5
28	Monitor the accounts of a company.	1	2	3	4	5
29	Order office supplies.	1	2	3	4	5
30	Organise transportation of products from a factory.	1	2	3	4	5

Q4 For the following statements, answer TRUE if it is mostly true for you and FALSE if it is mostly false for you.

	In thinking about your present job or in planning for an occupation or career:	TRUE	FALSE
1	I need reassurance that I have made the right choice of occupation.	1	2
2	I am concerned that my present interests may change over the years.	1	2
3	I am uncertain about the occupations I could perform well.	1	2
4	I don't know what my major strengths and weaknesses are.	1	2
5	The jobs I can do may not pay enough to live the kind of life I want.	1	2
6	If I had to make an occupational choice right now, I'm afraid I would make a bad choice.	1	2
7	I need to find out what kind of career I should follow.	1	2
8	Making up my mind about a career has been a long and difficult problem for me.	1	2
9	I am confused about the whole problem of deciding on a career.	1	2
10	I am not sure that my present occupational choice or job is right for me.	1	2
11	I don't know enough about what workers do in various occupations.	1	2
12	No single occupation appeals strongly to me.	1	2
13	I am uncertain about which occupation I would enjoy.	1	2
14	I would like to increase the number of occupations I could consider.	1	2
15	My estimates of my abilities and talents vary a lot from year to year.	1	2
16	I am not sure of myself in many areas of life.	1	2
17	I have known what occupation I want to follow for less than one year.	1	2
18	I can't understand how some people can be so set about what they want to do.	1	2

Q5	Currently for my career I need the following information:	YES	NO
1	How to find a job in my chosen career.	1	2
2	What kinds of people enter different occupations.	1	2
3	More information about employment opportunities.	1	2
4	How to get the necessary training in my chosen career.	1	2

Q6	Currently for my career, I have the following difficulties:	YES	NO
1	I am uncertain about my ability to finish the necessary education or training.	1	2
2	I don't have the money to follow the career I want most.	1	2
3	I lack the special talents to follow my first choice.	1	2
4	An influential person in my life does not approve of my vocational choice.	1	2

Q7	Please indicate how much confidence you have that you could accomplish each of these tasks.	No confidence at all	Very little confidence	Moderate confidence	Much confidence	Complete confidence
1	Find information in the library about occupations you are interested in.	1	2	3	4	5
2	Select one management programme from a list of potential management programmes you are considering.	1	2	3	4	5
3	Make a plan of your goals for the next five years.	1	2	3	4	5
4	Determine the steps to take if you are having academic trouble with an aspect of your chosen management programme.	1	2	3	4	5
5	Accurately assess your abilities.	1	2	3	4	5
6	Select one occupation from a list of potential occupations you are considering.	1	2	3	4	5
7	Determine the steps you need to take to successfully complete your chosen management programme.	1	2	3	4	5
8	Persistently work at your management programme or career goal even when you get frustrated.	1	2	3	4	5
9	Determine what your idea job would be.	1	2	3	4	5
10	Find out the employment trends for an occupation over the next ten years.	1	2	3	4	5
11	Choose a career that will fit your preferred lifestyle.	1	2	3	4	5
12	Prepare a good resume.	1	2	3	4	5

13	Change management programmes if you did not like your first choice.	1	2	3	4	5
14	Decide what you value most in an occupation.	1	2	3	4	5
15	Find out about the average yearly earnings of people in an occupation.	1	2	3	4	5
16	Make a career decision and then not worry about whether it was right or wrong.	1	2	3	4	5
17	Change occupations if you are not satisfied with the one you enter.	1	2	3	4	5
18	Figure out what you are or are not ready to sacrifice to achieve your career goals.	1	2	3	4	5
19	Talk with a person already employed in the field you are interested in.	1	2	3	4	5
20	Choose a management programme or career that will fit your interests.	1	2	3	4	5
21	Identify employers, firms, institutions relevant to your career possibilities.	1	2	3	4	5
22	Define the type of lifestyle you would like to have.	1	2	3	4	5
23	Find information about graduate or professional schools.	1	2	3	4	5
24	Successfully manage the job interview process.	1	2	3	4	5
25	Identify some reasonable management programme or career alternatives if you are unable to get your first choice.	1	2	3	4	5

Q8	**Please answer the following questions**	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	I would take a different job that paid the same.	1	2	3	4	5
2	I want a career in this vocation.	1	2	3	4	5
3	If I could do it all over, I would not choose this vocation.	1	2	3	4	5
4	If I had all the money I needed, I would still want to be in this vocation.	1	2	3	4	5
5	I enjoy my vocation too much to give it up.	1	2	3	4	5

6	This is my ideal vocation for my life work.	1	2	3	4	5
7	I've been disappointed ever since I entered this vocation.	1	2	3	4	5

Q9 Please indicate the degree to which the questions below accurately describe your own situation and feelings.

1. How much meaning does work add to your life?

Little meaning	1	2	3	4	5	6	7	Much meaning

2. To what extent do you regard work as the most important aspect in your life?

To no extent	1	2	3	4	5	6	7	To a very large extent

3. How much does your work determine your value as a person?

Not at all	1	2	3	4	5	6	7	All of it

4. How valued are people, based on their contribution to work?

Not valued at all	1	2	3	4	5	6	7	Highly valued

5. How much is your own identity based on your job?

Nothing at all	1	2	3	4	5	6	7	Very much

6. How "lost" would you be without your job?

Very lost	1	2	3	4	5	6	7	Not lost at all

7. To what extent is your occupation the most important activity in your life?

To no extent	1	2	3	4	5	6	7	To a very large extent

8. To what degree do you base the best description of 'who you are' on your career?

To no degree	1	2	3	4	5	6	7	To a very large degree

9. To what extent would your life be valueless without your job?

To no extent	1	2	3	4	5	6	7	To a very large extent

10. How central does the organisation that you work for stand in your life?

Not central at all	1	2	3	4	5	6	7	Very central

11. To what degree do you see yourself as part of the organisation that you work for?

To no degree	1	2	3	4	5	6	7	To a very large degree

12. How much is the best description of "who you are" related to your involvement in the organisation that you work for?

Not related at all	1	2	3	4	5	6	7	Highly related

13. It is assumed that the standards of your job are high. How easily can you identify with these high standards of your job?

Not at all	1	2	3	4	5	6	7	Very easily

14. How much does your job prevent you from being yourself or becoming who you want to be?

Very much	1	2	3	4	5	6	7	Not at all

15. To what extent does your job allow for the achievement of personal goals?

To no extent	1	2	3	4	5	6	7	To a high extent

16. How rewarding is work in itself as an activity?

Not rewarding at all	1	2	3	4	5	6	7	Highly rewarding

17. How much do you see your job as your whole life?

Very little	1	2	3	4	5	6	7	Very much

18. How much of your identity is based on your occupation?

Very little	1	2	3	4	5	6	7	Very much

19. How directly related are all your achievements to your job?

Not related at all	1	2	3	4	5	6	7	Fully related

20. How much do you give to your job?

I do not give anything	1	2	3	4	5	6	7	I give everything

21. How likely are you to regard your work as only a small part of who you are?

Very likely	1	2	3	4	5	6	7	Very unlikely

22. To what extent do you know yourself?

To no extent	1	2	3	4	5	6	7	To a very large extent

23. To what degree are you at peace with your self-identity?

To no degree	1	2	3	4	5	6	7	To a very large degree

24. To what extent do you feel that your work values and beliefs reflect who you are?

To no extent	1	2	3	4	5	6	7	To a very large extent

25. How clear is your future vision of yourself?

Not clear at all	1	2	3	4	5	6	7	Very clear

26. Do you have a good idea of what your future holds for you?

No idea at all	1	2	3	4	5	6	7	Very clear idea

27. To what degree do your values match or fit the values of the organisation that you work for?

To no degree	1	2	3	4	5	6	7	To a very large degree

28. To what degree are you able to maintain your values at the organisation that you work for?

To no degree	1	2	3	4	5	6	7	To a very large degree

29. To what extent does the difference between your values and those of the organisation that you work for prevent you from fitting in?

To no extent	1	2	3	4	5	6	7	To a great extent

30. Does it feel like a personal accomplishment when someone praises the organisation that you work for?

Never	1	2	3	4	5	6	7	Always

31. How often do you say 'we' rather than 'they' when you talk about the organisation that you work for?

Never	1	2	3	4	5	6	7	Always

32. How interested are you in what others think about the organisation that you work for?

Not interested	1	2	3	4	5	6	7	Very interested

33. How much do you consider the organisation's successes as your own?

No consideration	1	2	3	4	5	6	7	Very high consideration

34. How personally insulted do you feel when someone criticizes the organisation that you work for?

Not insulted at all	1	2	3	4	5	6	7	Very insulted

35. How embarrassed do you feel when the media criticizes the organisation that you work for?

Not at all	1	2	3	4	5	6	7	Very embarrassed

36. How much of your interest is outside the organisation that you work for?

No interest	1	2	3	4	5	6	7	All interest

Demographic questions

Q10 Please indicate your gender

Male	Female
1	2

Q11 Please indicate your current age in years

Q12 Please indicate your home language(s)

English	Afrikaans	IsiNdebele	IsiXhosa	IsiZulu	Sepedi	Sesotho	Setswana	SiSwati	Tshivenda	Xitsonga
1	2	3	4	5	6	7	8	9	10	11
Other – please specify										

Q13 Please indicate your ethnicity

African	White	Coloured	Indian	Other	Please specify
1	2	3	4	5	

Q14 Briefly describe your current (or most recent occupation)

Q15 Please indicate your current position in your organization / or your job level/status

Junior management	Middle management	Senior management	C-Suite	Partner	Other – please specify
1	2	3	4	5	

Q16 Highest qualification obtained

Matric / Grade 12	Diploma	Bachelors Degree	Honours Degree	Masters Degree	PhD
1	2	3	4	5	6

Q17 Please indicate the total number of years of your work experience

0-5	5-10	11-20	21-30	31-40	40+
1	2	3	4	5	6

Q18 Employment Industry/Sector

Accountancy, Banking & Finance	Business, Consulting & Management	Engineering & Manufacturing	Energy	Environment & Agriculture	Healthcare	Hospitality & Events Management
1	2	3	4	5	6	7

Information Technology	Marketing, Advertising & PR	Science & Pharmaceuticals	Transport & Logistics	Recruitment & HR	Leisure, Sport & Tourism	Creative Arts & Design
8	9	10	11	12	13	14

Q19 If you have not provided your email address in Q1, please provide any unique name or code or your email address or cellphone number in the space below. We will need this information to link your phase 1 data with your phase 2 data.

Q20 What has been the biggest event in your work life in the past 6 months?

Q21 What has been the biggest event in your life in the past 6 months?

Appendix B: Comprehensive Information on Means and Standard Deviation Scores (Within Group Differences)

Business Management students (MBA/MBL & Specialised Business Masters)	Career Decision-Making Self-Efficacy	Incongruent	43	4.0558	.51189
		Congruent	160	4.1547	.53340
	Career Commitment	Incongruent	44	3.4058	.71325
		Congruent	162	3.3907	.79225
	Work Identity	Incongruent	42	4.9015	.76763
		Congruent	146	4.7936	.77477
	Vocational Identity	Incongruent	41	30.9024	3.81972
		Congruent	158	30.0063	3.99282
	Realistic	Incongruent	44	2.1545	1.03597
		Congruent	162	1.6247	.84464
	Investigative	Incongruent	44	2.2500	1.05841
		Congruent	162	2.1531	.95840
	Artistic	Incongruent	44	2.6864	1.04894
		Congruent	162	2.8630	1.08324
	Social	Incongruent	44	3.3636	1.04349
		Congruent	162	3.4556	.95025
	Enterprising	Incongruent	44	3.3727	.69495
		Congruent	162	4.2543	.48173
	Conventional	Incongruent	42	2.9381	1.02979
		Congruent	162	2.5790	.90069
					.
Governance students (Public Admin. & Management)	Career Decision-Making Self-Efficacy	Incongruent	73	4.0225	47272
		Congruent	81	3.8005	.55877
	Career Commitment	Incongruent	73	3.6967	.61765
		Congruent	81	3.4921	.73783
	Work Identity	Incongruent	73	5.0118	.94356
		Congruent	80	5.0646	.84964
	vocational Identity	Incongruent	71	29.7042	4.55253
		Congruent	81	29.8765	3.22251
	Realistic	Incongruent	73	1.6740	.82698
		Congruent	81	2.2741	1.17875
	Investigative	Incongruent	73	2.2274	1.07977
		Congruent	81	2.1802	.99680
	Artistic	Incongruent	73	2.8411	1.13037
		Congruent	81	2.6864	1.04687

Social	Incongruent	73	3.3863	1.05637
	Congruent	81	3.2914	1.10093
Enterprising	Incongruent	73	4.1342	.57257
	Congruent	81	3.1062	.81553
Conventional	Incongruent	72	2.7472	1.11127
	Congruent	81	2.7481	1.00239

Appendix C: Comprehensive Independent Samples T-Test Results (Within Group Differences): Business Management Students vs. Governance Students

Academic Environment code			Levene's Test for Equality of Variances		t-test for Equality of Means		
			F	Sig.	t	df	Sig. (2-tailed)
Business Management students	Career Decision-Making Self-Efficacy	Equal variances assumed	1,483	0,225	-1,089	201	0,278
	Career Commitment	Equal variances assumed	0,760	0,384	0,115	204	0,908
	Work Identity	Equal variances assumed	0,055	0,816	0,797	186	0,427
	Vocational Identity	Equal variances assumed	0,157	0,693	1,292	197	0,198
	Realistic	Equal variances not assumed	6,943	0,009	3,122	59,411	0,003
	Investigative	Equal variances assumed	1,958	0,163	0,582	204	0,562
	Artistic	Equal variances assumed	0,044	0,835	-0,965	204	0,336
	Social	Equal variances assumed	0,357	0,551	-0,557	204	0,578
	Enterprising	Equal variances not assumed	3,963	0,048	-7,914	54,707	0,000
	Conventional	Equal variances assumed	0,899	0,344	2,234	202	0,027
Governance students	Career Decision-Making Self-Efficacy	Equal variances assumed	1,247	0,266	2,646	152	0,009

Academic Environment code			Levene's Test for Equality of Variances		t-test for Equality of Means		
			F	Sig.	t	df	Sig. (2-tailed)
	Career Commitment	Equal variances assumed	1,964	0,163	1,855	152	0,066
	Work Identity	Equal variances assumed	1,551	0,215	-0,364	151	0,716
	Vocational Identity	Equal variances not assumed	8,609	0,004	-0,266	124,052	0,791
	Realistic	Equal variances assumed	10,132	0,002	-3,620	152	0,000
	Investigative	Equal variances assumed	0,120	0,729	0,282	152	0,779
	Artistic	Equal variances assumed	0,520	0,472	0,882	152	0,379
	Social	Equal variances assumed	0,358	0,550	0,545	152	0,587
	Enterprising	Equal variances assumed	3,599	0,060	8,961	152	0,000
	Conventional	Equal variances assumed	0,645	0,423	-0,005	151	0,996

Appendix D: Comprehensive Information on Means and Standard Deviation Scores (Between Group Differences)

P-E fit (Congruence)		Academic Environment Code	*N*	*M*	*SD*
Incongruent	Career Decision-Making Self-Efficacy	Business management students	43	4.0558	.51189
		Governance students	73	4.0225	.47272
	Career Commitment	Business management students	44	3.4058	.71325
		Governance students	73	3.6967	.61765
	Work Identity	Business management students	42	4.9015	.76763
		Governance students	73	5.0118	.94356
	Vocational Identity	Business management students	41	30.9024	3.81972
		Governance students	71	29.7042	4.55253
	Realistic	Business management students	44	2.1545	1.03597
		Governance students	73	1.6740	.82698
	Investigative	Business management students	44	2.2500	1.05841
		Governance students	73	2.2274	1.07977
	Artistic	Business management students	44	2.6864	1.04894
		Governance students	73	2.8411	1.13037
	Social	Business management students	44	3.3636	1.04349
		Governance students	73	3.3863	1.05637
	Enterprising	Business management students	44	3.3727	.69495
		Governance students	73	4.1342	.57257
	Conventional	Business management students	42	2.9381	1.02979
		Governance students	72	2.7472	1.11127
Congruent	Career Decision-Making Self-Efficacy	Business management students	160	4.1547	.53340

P-E fit (Congruence)	Academic Environment Code	*N*	*M*	*SD*
	Governance students	81	3.8005	.55877
Career Commitment	Business management students	162	3.3907	.79225
	Governance students	81	3.4921	.73783
Work Identity	Business management students	146	4.7936	.77477
	Governance students	80	5.0646	.84964
Vocational Identity	Business management students	158	30.0063	3.99282
	Governance students	81	29.8765	3.22251
Realistic	Business management students	162	1.6247	.84464
	Governance students	81	2.2741	1.17875
Investigative	Business students	162	2.1531	.95840
	Governance students	81	2.1802	.99680
Artistic	Business management students	162	2.8630	1.08324
	Governance students	81	2.6864	1.04687
Social	Business management students	162	3.4556	.95025
	Governance students	81	3.2914	1.10093
Enterprising	Business management students	162	4.2543	.48173
	Governance students	81	3.1062	.81553
Conventional	Business management students	162	2.5790	.90069
	Governance students	81	2.7481	1.00239

Appendix E: Comprehensive Independent Samples T-Test Results (Between Group Differences): Incongruent Business Management and Incongruent Governance Students vs. Congruent Business Management and Congruent Governance Students

P-E fit (Congruence)			Levene's Test for Equality of Variances		t-test for Equality of Means		
			F	Sig.	*t*	df	Sig. (2-tailed)
Incongruent	Career Decision-Making Self-Efficacy	Equal variances assumed	.006	.937	.356	114	.723
	Career Commitment	Equal variances assumed	.285	.594	-2.326	115	.022
	Work Identity	Equal variances assumed	2.547	.113	-.645	113	.520
	Vocational Identity	Equal variances assumed	1.621	.206	1.420	110	.158
	Realistic	Equal variances not assumed	6.103	.015	2.616	75.705	.011
	Investigative	Equal variances assumed	.257	.613	.110	115	.912
	Artistic	Equal variances assumed	.604	.439	-.737	115	.463
	Social	Equal variances assumed	.014	.904	-.113	115	.910
	Enterprising	Equal variances assumed	.204	.652	-6.424	115	.000
	Conventional	Equal variances assumed	.846	.360	.908	112	.366

P-E fit (Congruence)			Levene's Test for Equality of Variances		t-test for Equality of Means		
			F	Sig.	*t*	df	Sig. (2-tailed)
	Career Decision-Making Self-Efficacy	Equal variances assumed	.006	.940	4.793	239	.000
	Career Commitment	Equal variances assumed	.124	.725	-.962	241	.337
	Work Identity	Equal variances assumed	.974	.325	-2.429	224	.016
	Vocational Identity	Equal variances not assumed	4.231	.041	.271	194.189	.787
	Realistic	Equal variances not assumed	15.088	.000	4.423	122.343	.000
	Investigative	Equal variances assumed	.191	.662	-.205	241	.837
	Artistic	Equal variances assumed	.000	.995	1.211	241	.227
	Social	Equal variances assumed	2.846	.093	1.203	241	.230
	Enterprising	Equal variances not assumed	16.954	.000	11.692	108.704	.000
	Conventional	Equal variances assumed	3.073	.081	-1.328	241	.185

Appendix F: Reliability of the constructs

The reliability analysis was conducted on 13 constructs including their items to measure the internal consistency of each construct. One construct (OB) was deleted because its item values were less than 0.4 as recommended by Pallant (2010). After deletion of the construct, the results in Table 12 demonstrate that all the constructs are internally consistent in their measurement.

Table 12. Reliability of constructs

Constructs	Items	Corrected Item-Total Correlation	Cronbach's Alpha	Conclusion
Realistic Type	R1b	0,609	**0,876**	Good internal consistency of the scale because Cronbach's Alpha greater than 0.7. Therefore, this construct is reliable.
	R2b	0,788		
	R3b	0,722		
	R4b	0,754		
	R5b	0,694		
Investigative Type	I1b	0,672	**0,844**	Good internal consistency of the scale because Cronbach's Alpha greater than 0.7. Therefore, this construct is reliable.
	I2b	0,716		
	I3b	0,533		
	I4b	0,693		
	I5b	0,695		
Artistic Type	A1b	0,624	**0,852**	Good internal consistency of the scale because Cronbach's Alpha greater than 0.7. Therefore, this construct is reliable.
	A2b	0,674		
	A3b	0,683		
	A4b	0,699		
	A5b	0,643		
Social Type	S1b	0,637	**0,848**	Good internal consistency of the scale because Cronbach's Alpha greater
	S2b	0,668		

	S3b	0,687		than 0.7. Therefore, this construct is reliable.
	S4b	0,643		
	S5b	0,649		
Enterprising Type	E1b	0,573	**0,764**	Good internal consistency of the scale because Cronbach's Alpha greater than 0.7. Therefore, this construct is reliable.
	E2b	0,657		
	E3b	0,475		
	E4b	0,594		
	E5b	0,455		
Conventional Type	C1b	0,573	**0,838**	Good internal consistency of the scale because Cronbach's Alpha greater than 0.7. Therefore, this construct is reliable.
	C2b	0,622		
	C3b	0,566		
	C4b	0,715		
	C5b	0,726		
Vocational Identity	VI1b	0,433	**0,828**	Good internal consistency of the scale because Cronbach's Alpha greater than 0.7. Therefore, this construct is reliable.
	VI2b	0,395		
	VI3b	0,332		
	VI4b	0,271		
	VI5b	0,375		
	VI6b	0,468		
	VI7b	0,605		
	VI8b	0,632		
	VI9b	0,619		
	VI10b	0,394		
	VI11b	0,373		
	VI12b	0,311		
	VI13b	0,329		

	VI14b	0,357		
	VI15b	0,390		
	VI16b	0,562		
	VI17b	0,230		
	VI18b	0,530		
OI	OI1b	0,639	**0,768**	Good internal consistency of the scale because Cronbach's Alpha greater than 0.7. Therefore, this construct is reliable.
	OI2b	0,567		
	OI3b	0,566		
	OI4b	0,504		
CSE	CSE1b	0,292	**0,946**	Good internal consistency of the scale because Cronbach's Alpha greater than 0.7. Therefore, this construct is reliable.
	CSE2b	0,566		
	CSE3b	0,722		
	CSE4b	0,726		
	CSE5b	0,683		
	CSE6b	0,719		
	CSE7b	0,662		
	CSE8b	0,667		
	CSE9b	0,730		
	CSE10b	0,655		
	CSE11b	0,720		
	CSE12b	0,606		
	CSE13b	0,526		
	CSE14b	0,706		
	CSE15b	0,611		
	CSE16b	0,494		
	CSE17b	0,501		

	CSE18b	0,743		
	CSE19b	0,566		
	CSE20b	0,738		
	CSE21b	0,709		
	CSE22b	0,603		
	CSE23b	0,578		
	CSE24b	0,668		
	CSE25b	0,751		
Career Commitment	CC1b	0,458	**0,778**	Good internal consistency of the scale because Cronbach's Alpha greater than 0.7. Therefore, this construct is reliable.
	CC2b	0,257		
	CC3b	0,356		
	CC4b	0,593		
	CC5b	0,778		
	CC6b	0,780		
	CC7b	0,329		
Work Identity	WI1b	0,672	**0,938**	Good internal consistency of the scale because Cronbach's Alpha greater than 0.7. Therefore, this construct is reliable.
	WI2b	0,678		
	WI3b	0,744		
	WI4b	0,427		
	WI5b	0,758		
	WI6b	-0,357		
	WI7b	0,636		
	WI8b	0,756		
	WI9b	0,653		
	WI10b	0,622		
	WI11b	0,638		

	WI12b	0,761		
	WI13b	0,480		
	WI14b	0,373		
	WI15b	0,497		
	WI16b	0,649		
	WI17b	0,786		
	WI18b	0,790		
	WI19b	0,742		
	WI20b	0,620		
	WI21b	0,539		
	WI22b	0,378		
	WI23b	0,321		
	WI24b	0,634		
	WI25b	0,468		
	WI26b	0,513		
	WI27b	0,671		
	WI28b	0,474		
	WI29b	0,098		
	WI30b	0,643		
	WI31b	0,381		
	WI32b	0,601		
	WI33b	0,740		
	WI34b	0,532		
	WI35b	0,390		
	WI36b	0,006		

Reliability of OB

Cronbach's Alpha	N of Items	Conclusion
0.577	4	Poor internal consistency of the scale because Cronbach's Alpha is less than 0.7. Therefore, this construct needs to be improved.

Appendix G: Ethical Clearance: University of Pretoria

RESEARCH ETHICS COMMITTEE

Tel: +27 12 420 3434
E-mail: alewyn.nel@up.ac.za

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Economic and Management Sciences

28 October 2021

Ms LM Tabane
PhD Industrial Psychology: Department of Human Resource Management

With reference to Ethical Protocol number EMS 134/18, the research project was conditionally approved 17 September 2018 and received final approval on 23 July 2019 by the EMS Research Ethics Committee.

The approval stands, with the following amendments:

Research tile: Assessing the effect of management education on vocational behaviour ***Student No***: 16398859
Supervisor & Co-supervisor: Prof O Ledimo and Prof K Stanz

Sincerely,

PROF JA NEL
CHAIR: EMS RESEARCH ETHICS COMMITTEE

cc: Student Administration

Fakulteit Ekonomiese en Bestuurswetenskappe
Lefapha la Disaense tša Ekonomi le Taolo