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## ABBREVIATIONS

AC	Affective Commitment
CE	Corporate Entrepreneurship
CFI	Comparative Fit Index
DBL	Doctor of Business Leadership
GSBL	Graduate School of Business Leadership
HRM	Human resource manager
HRP	Human Resource Practice
IIB	Individual Innovative Behaviour
IWB	Innovative Work Behavior
MBL	Master of Business Leadership
PA	Performance Appraisal
PP	Proactive Personality
RMSEA	Root Mean Square Error of Approximation
SPSS	Statistical Package for Social Sciences
TL	Transformational Leadership
TLI	Tucker-Lewis-Index
UNISA	University of South Africa
WE	Work Engagement

## **CHAPTER 1: RESEARCH ORIENTATION**

This first chapter serves as an orientation to this study. It details the background, highlights the business problem, and outlines the aim and objectives, significance, and constraints in this research.

The thesis focuses on performance appraisal (PA), a valuable managerial tool used by human resource management to enable organisational success. Consideration has been afforded to the relationship concerning PA and innovation (the “PA-innovation link”), as innovation is often deemed to be an essential antecedent to organisational success. Both the literature review and the empirical analysis are focused on this link. As an outcome, this research aimed to quantify the relative size and practical significance of PA as a driver of individual innovation. PA is analysed herein as a single determinant of innovation amongst other organisational variables, and also across organisations.

### **1.1 Background to the study**

Global competition has forced organisations to find innovative ways to increase competitive advantage for survival. In the pursuit to remain competitive, organisations strive to adapt and evolve continuous improvement practices (Krishnan, 2015). Rangriz and Pashootanizadeh (2014), and Wu, Sears, Coberley and Pope (2016) suggest that organisations that compete internationally are determined to gain market share and are continually trying to find ways and means to reduce the organisation’s cost base, increase employee productivity, and increase competitive advantage. According to Choi, Moon and Ko (2013), as well as Ryakhovskaya, Gruzina, Arsenova, Linder and Pukhova (2015), an organisation’s capacity to innovate is necessary for organisational efficacy when exposed to global competition. Aleassa (2014) and Qiu, Hu, Zhang and Li (2015) indicate that today’s business environment exhibits increased competition and innovation.

Innovation is essential to organisations in the current economic climate. It is therefore not unforeseen that, over the past few decades, the body of knowledge on innovation has grown substantially (Harris, 1984; Potocnik, & Anderson, 2012). Ryakhovskaya, Gruzina, Arsenova, Linder and Pukhova (2015), for example, advocate that innovation is crucial for the market competitiveness of the organisation. In addition, many scholars (e.g., Abbaspour, 2015; Aryanto,

Fontana, & Afiff, 2015; Gil-Marques, & Moreno-Luzon, 2013; Hashim, Ali, & Fawzi, 2005; Hurley, & Hult, 1998; Jonczyk, & Buchelt, 2015; Le Bas, & Lauzikas, 2009; Looise, & Van Riemsdijk, 2004; Matthew, 2014; Muller, Valikangas, & Merlyn, 2005; Potocnik, & Anderson, 2012; Subramaniam, & Youndt, 2005) provide confirmation that innovation is a prerequisite for organisational growth and survival. Furthermore, Akman and Yilmaz (2008) and Ling and Nasurdin (2011) recognise innovation as a fundamental success factor in a progressively competitive global business environment. It is evident that innovation must almost become a way of life for organisations to survive in the new economic climate.

A plethora of studies has investigated and evaluated the various antecedents to innovation. Some of these variables are: affective commitment (AC) (Jafri, 2010), proactive personality (PP) (Seibert, Kraimer, & Crant, 2001; Tai, & Mai, 2016; Zhang, Li, & Yu, 2014), organisational design (Michaelis, Stegmaier, & Sonntag, 2010), organisational climate (Michaelis, Stegmaier, & Sonntag, 2010; Shanker, Bhunugopan, & Fish, 2012), organisational culture (Michaelis, Stegmaier, & Sonntag, 2010; Tipu, Ryan, & Fantazy, 2012), leadership (Al-Husseini, & Elbeltagi, 2012; García-Morales, Matías-Reche, & Hurtado-Torres, 2008; Hu, Gu, & Chen, 2012; Khan, Aslam, & Riaz, 2012; Oke, Munshi, & Walumbwa, 2009; Paulsen, Callan, Ayoko, & Saunders, 2013; Tipu, Ryan, & Fantazy, 2012), work engagement (WE) (Agarwal, 2014; Agarwal, Datta, Blake-Beard, & Bhargava, 2012), PA (Aktharsha, & Sengottuvel, 2016; Choi, Moon, & Ko, 2013; Dalota, & Perju, 2010; Ling, & Nasurdin, 2011; Runfeng, 2011), and other HRP (Aktharsha, & Sengottuvel, 2016; Dalota, & Perju, 2010; Kong, Chadee, & Raman, 2013; Matthew, 2014). It is intriguing to find that these researchers utilised a limited amount of variables in designing their research.

It is quite apparent that innovation is important, as highlighted above. However, it is not possible to achieve innovation without allocating human resources to innovation initiatives and without introducing suitable HRPs (Findikli, Yozgat, & Rofcanin, 2015; Kim, & Choi, 2014; Le Bas, & Lauzikas, 2009). Also, according to Chen and Huang (2009), Cooke and Saini (2010) and Damanpour (1991), it is important that HRPs be adopted as part of the effort to implement innovation within an organisation.

Referring to specific practices, numerous studies have shown that particular HRPs namely PA, career opportunities, employee participation, and rewards contribute to innovation (Dalota, & Perju, 2010; Jimenez-Jimenez, & Sanz-Valle, 2005; Laursen, & Foss, 2003). On the other hand, Aktharsha and Sengottuvel's (2016) research revealed that there are three chief HRPs, i.e., PA, recruitment and selection, and compensation, as well as rewards that are significant predictors of knowledge sharing. Numerous articles (Aktharsha, & Sengottuvel, 2016; De Winne, & Sels, 2010; Subramaniam, & Youndt, 2005; Wu, & Lee, 2013) have already empirically established that knowledge sharing plays an important role in predicting innovation. Wu and Lee (2013) further suggest that training and development, compensation and rewards, participation, and work design significantly affect knowledge sharing and innovation performance. Also, Kim and Choi (2014) found that PA, reward and training enhance AC which, in turn, contributes to innovation. This study also attempts to clarify and quantify the specific human resource drivers of innovation.

Given the aforementioned, it is evident that there is no consensus on the particular practices which drive innovation. More so, the relative importance of the various practices is not well known. It is also not surprising that much of the research into HRP and innovation (e.g., Al-Bahussin, & El-Garaihy, 2013; Al-Ghamdi, Abdel-Razek, & Abdel-Razek, 2015; Dalota, & Perju, 2010; De Saa-Perez, & Diaz-Diaz, 2010; Gil-Marques, & Moreno-Luzon, 2013; Katou, 2008; Le Bas, & Lauzikas, 2009) as well as PA and innovation (e.g., Aktharsha, & Sengottuvel, 2016; Bal, Bozkurt, & Ertemsir, 2014; Choi, Moon, & Ko, 2013; Dalota, & Perju, 2010; Jimenez-Jimenez, & Sanz-Valle, 2005; Ling, & Nasurdin, 2011; Mark, & Akhtar, 2003; Runfeng, 2011; Shipton, West, Dawson, Birdi, & Patterson, 2006) has been conducted primarily within the Western context. Evidence of empirical research on the HRPs-innovation relationship, as well as the PA-innovation relationship, is seemingly lacking within the South African context. Within the latter context, the specific drivers of innovation across employees and organisations are not well specified. This study attempts to go further than merely creating clarity on the specific human resource drivers of innovation (as mentioned above); it also contextualises the research within the South African context.

Studies on the PA-innovation relationship is often flawed as it is frequently based on data drawn from organisations pooled together as a single unit. This means that the organisations concerned are not compared and that statistics per organisation are not provided. The research by Bal, Bozkurt

and Ertemsir (2014) makes use of a pooled sample of 48 organisations within Turkey, drawn from various sectors, such as health, media, textile, retail and banking. Shipton, West, Dawson, Birdi and Patterson's (2006) study investigates a pooled sample of 22 organisations within the United Kingdom, drawn from the manufacturing sector only. Also, with reference to samples, Jimenez-Jimenez and Sanz-Valle's (2005) study involves a pooled sample of 376 organisations from the Murcia region in Spain. Mark and Akhtar's (2003) research, meanwhile, makes use of a pooled sample of 63 publicly listed organisations. The investigation by Choi, Moon and Ko (2013) makes use of a global South Korean organisation that consists of 50 divisions with 177 000 employees and active in various sectors, for example, chemical, global business, electronics, telecommunications, and mobile communications. For the current study, 53 organisations were selected as the sample, and the research is intended to explore the PA-innovation relationship, both across employees and within organisations. Further, studies on the relationship between HRPs and innovation is often single-company or single-industry driven and undertaken with relatively small samples. This study uses a relatively large sample ( $N > 3000$ ) to investigate the relationship both *across* employees and *within* organisations.

The majority of existing research (e.g., Gil-Marques, & Moreno-Luzon, 2013; Le Bas, & Lauzikas, 2009; Matthew, 2014) has been limited to examining HRPs as a single concept rather than as individual practices in their own right. Becker and Huselid (1998), in their seminal paper, as well as others, such as Makongoso, Gichira and Orwa (2015), Tang, Wei, Snape and Ng (2015) and Zhang and Jia (2010), prefer a focus on a single concept of HRP. This study attempts to include several other HRPs in the model. Boada-Grau and Gil-Ripoll (2009), Madmoli (2016), and Steyn (2012), as well as Sun, Aryee and Law (2007), prefer to focus on multiple HRPs. The focus of this research was on the individual practices, particularly PA, as PA allows managers to make informed decisions about which practice to focus on, rather than improving human resources in general.

In particular, ample attention has been paid to PA in the industrial and organisational psychology literature and in the human resource literature due to the extensive use of PA in organisations. Several studies (e.g., DeNisi, & Pritchard, 2006; Mitchell, 2010; Nankervis, & Compton, 2006; Runfeng, 2011; Thomas, & Mathew, 2014; Yu, 2010) claim that nearly all organisations worldwide utilise some form of PA system. Cizek (1991), DeNisi and Pritchard (2006), Edwards

and Williams (1998), and Siaguru (2011) therefore point out that it is for this reason that human resource practitioners and researchers have devoted close to a century to PA research. Chism (2007), and Taneja, Srivastava and Ravichandran (2015) indicate that PA literature is abundant and that this literature is also quite diverse.

More and more organisations are recognising the value that PA brings to the workforce as well as to the organisation. Various authors (e.g., Ahmed, Mohammad, & Islam, 2013; Amirkhani, & Khouzani, 2016; Boswell, & Boudreau, 2000; Dessler, 2012; Judge, & Ferris, 1993; Khoury, & Analoui, 2004; Scarpa, & Connelly, 2011) recognise PA as an indispensable constituent of human resources, utilised for the proficient directing of an organisation's employees. An organisation's employees are its most valuable asset (Yousefi, & Ghajari, 2015). PA is also acknowledged as a crucial element in the development of an organisation's workforce (Grobler, Warnich, Carrell, Elbert, & Hatfield, 2011; Edwards, & Williams, 1998; Khoury, & Analoui, 2004; Mahmood, Zafar, Zafar, & Nawaz, 2010; Rangriz, & Pashootanizadeh, 2014; Thomas, & Mathew, 2014). Most competitive organisations employ PA as a potent organisational tool to enhance performance and effectiveness, thereby achieving the organisation's goals and objectives (Ayers, 2013; DeNisi, & Pritchard, 2006; Edwards, & Williams, 1998; Esu, & Inyang, 2009; Rubin, 2011). Brown and Heywood (2005), for example, trust that the competitive position of an organisation can be increased by PA. Deepa, Palaniswamy and Kuppusamy (2014) advocate that PA is essential to an organisation as it determines the organisation's success or failure. Scaduto (2011) and Taneja, Srivastava and Ravichandran (2015), meanwhile, suggest that PA has a crucial part to play in the management of employees and that it has become an influential HRP.

It is interesting to note that PA may have many uses that may benefit both employees and the organisation. PA information may have many applications for organisations, for example, decision making concerning compensation and promotions as well as retention and developmental needs. In addition, if the PA is carried out successfully it can contribute considerably to employee motivation and satisfaction (Brown, & Heywood, 2005; Chism, 2007; DeNisi, & Pritchard, 2006; Dessler, 2012; Edwards, & Williams, 1998; Espinilla, de Andres, Martinez, & Martinez, 2013; Grobler, Warnich, Carrell, Elbert, & Hatfield, 2011; Harris, 1984; Khoury, & Analoui, 2004; Mahmood, Zafar, Zafar, & Nawaz, 2010; Rangriz, & Pashootanizadeh, 2014; Runfeng, 2011; Thomas, & Mathew, 2014). Deepa, Palaniswamy and Kuppusamy (2014), for example, suggest

that there are a few other uses or benefits to PA, namely: it enables dialogue between managers and employees; it improves employee focus by encouraging trust; it allows for the setting of goals; it reinforces the expected performance; it enhances performance, and it aids in the determination of training needs of employees. In South Africa, PA is often not used as a basis for paying out performance bonuses, which makes this country a particularly interesting case.

Several authors (e.g., Grote, 1996; Khoury, & Analoui, 2004; Murphy, Cleveland, & Hanscom, 2017; Nickols, 2007) point out that organisations invest many hours and a lot of money in PAs, and given the popularity of such practices, it must be assumed that PA does contribute to individual and organisational success. Furthermore, given the importance of innovation in organisations, the investigation of the PA-innovation link becomes a very pressing problem from a business standpoint. Nickols (2007), for instance, provides an example of a South African telecommunications company in which the annual costs of PA were approximately 1.1 million US dollars. The same article also offers an example of a Western company in which the costs of staff time spent on PA were conservatively estimated to be in the region of 100 million US dollars per year (Nickols, 2007). Furthermore, decreased employee productivity, employee disappointment, employee stress, employee depression, reduced employee morale, and diminishing motivation are some of the “other” costs related to PAs, in addition to time and money (Blankenship, 2002; Nickols, 2007; Scullen, 2011). These costs can negatively influence an organisation’s bottom line when the suitable value is not being extracted from an organisation’s PA system (Khoury, & Analoui, 2004; Nickols, 2007; Scullen, 2011). The costs associated with undertaking PAs may be unusually high if the assessments are not employed for their normally intended purposes as is the case in some South African organisations where they are not utilised to determine performance bonuses.

Despite the volume of literature on innovation and on PA (as separate concepts), empirical studies on the two concepts in combination is seemingly lacking, more so within the South African context. Close examination of the most recent literature on PA (as part of this study) led to the observation that PA was most often linked with fairness. The second most common element to which PA was linked was organisational citizenship behaviour. Apart from references to fairness and organisational citizenship behaviour, the next most common variables found were related to satisfaction and motivation. Therefore, contemporary models of PA thus include, apart from



fairness, concepts such as organisational citizenship behaviour, satisfaction, and motivation, as reflected in Appendix A. There has been a little contribution to the empirical understanding of the PA-innovation relationship. The main focus of this study was to establish PA as a driver of individual innovation within the organisational setting. Given the importance of innovation, as highlighted previously, as well as the importance of PA as highlighted in the subsequent paragraphs, the investigation of the PA-innovation relationship becomes even more important in the arenas of industrial and organisational psychology, business, and human resources.

The purpose of this study was to investigate the nature and magnitude of the relationship between PA and innovation. Many variables are presented as antecedents to innovation, one of these being the way in which employee performance is appraised within the workplace. In this study, the effect of PA on innovation was investigated by:

- Finding and critically evaluating literature which links PA and innovation.
- Finding and critically evaluating literature which links PA and innovation, given the context of other human resource practices (HRPs).
- Presenting empirical evidence on the link between PA and innovation (and its relative influence, given non-human resource antecedents).
- Presenting empirical evidence on the link between PA and innovation (and its relative influence, given non-human resource antecedents), across organisational contexts.
- Presenting empirical evidence on the link between PA and innovation (and its relative influence, given human resource antecedents).
- Presenting empirical evidence on the link between PA and innovation (and its relative influence, given human resource antecedents), across organisational contexts.
- Presenting empirical evidence on the link between PA and innovation, given moderation and mediation variables.

This constitutes the background to the study.

## **1.2 Research problem**

Extensive literature indicates that, in the present economic climate, innovation is critical to organisations' sustained success. Furthermore, the literature makes it clear that PA, as well as other

HRPs, are antecedents to innovation. However, proper knowledge regarding the various aspects of PA, the relative and absolute importance of PA, as well as PA as an antecedent amongst other antecedents to innovation, is not well-defined, particularly so when investigating these phenomena across employees and in different organisations. Also, appropriate quantification about PA as an antecedent to innovation, relative to an array of individual HRPs, both across employees and within South African organisations is also not sufficiently investigated. Also, proper quantification about the specific mediator and moderator variables which drive innovation is not satisfactorily explored, specifically within the South African context. This all occurs in organisations that devote many hours and large sums of money to PA. This dearth of evidence concerning the PA-innovation link may result in the inappropriate allocation of resources to PA or other HRPs and, in turn, may hinder the organisation's success. Furthermore, this link has not been well investigated in South Africa, where conditions may be unique. Added to this, practitioners might not understand the differences that may exist across organisations.

### **1.3 Research aim and objectives**

The high-level research aim is presented, followed by the lower level specific research objectives which describe the processes that would lead to the achievement of the research aim.

#### **1.3.1 Research aim**

The principal aim of this research was to quantify the position of PA as an antecedent to innovation in the workplace, both across employees and within South African organisations. The aim was to provide data-informed results to address the inconsistencies and, controversies which exist in the PA-innovation literature and differences in perceptions amongst managers regarding the role of PA in innovation.

#### **1.3.2 Specific research objectives**

Listed below are the specific study objectives that this research set out to achieve:

- Literature research objectives:
  - Objective 1: Critically review the present body of knowledge pertaining to the link between PA and innovation.

- Objective 2: Report on the magnitude of the effect of PA on innovation based on a review of the literature.
- Objective 3: Report on the relative magnitude of the effect of PA, given other HRPs, on innovation based on a review of the literature.
- Empirical research objectives:
  - Objective 4: Empirically investigate the magnitude of the effect of PA, and its individual items, relative to other organisational variables, on innovation, across employees (in general).
  - Objective 5: Empirically investigate the magnitude of the effect of PA, and its individual items, relative to other organisational variables, on innovation, within (specific) organisations.
  - Objective 6: Empirically investigate the relative magnitude of the effect of PA, given other HRPs, on innovation, across employees (in general).
  - Objective 7: Empirically investigate the relative magnitude of the effect of PA, given other HRPs, on innovation, within (specific) organisations.
  - Objective 8: Empirically test different models on the PA-innovation link, applying mediators such as WE and AC, and moderators such as PP, transformational leadership (TL), and corporate entrepreneurship (CE).

Achieving these research objectives has allowed the realisation of the principal research aim in this study.

#### **1.4 Significance of the research**

This study is significant as it addresses an important topic on which limited information is available. According to Swanepoel, Erasmus and Schenk (2008), the measurement of employee performance is indispensable to the organisation achieving its goals and objectives. PAs are commonly used by companies throughout the world and it is therefore critical to stress how important PA studies are to all stakeholders (Jirjahn, & Poutsma, 2013; Khan, 2013; Runfeng, 2011). In many such organisations, the effects of the link between PA and innovation are not clearly articulated. From a business perspective, empirical research on the PA-innovation link is seemingly lacking. This is a particularly problematic matter from an academic standpoint

as well as from a practitioner's perspective, given the amount of time and money spent on PA (Grote, 1996; Khoury, & Analoui, 2004; Murphy, Cleveland, & Hanscom, 2017; Nickols, 2007) and the importance of identifying antecedents which may drive innovation. This research focuses on this link.

This research is significant as it synthesises literature and exposes a key gap in the existing body of knowledge. Critically reviewing and synthesising the present body of knowledge pertaining to the PA-innovation link provides a foundation for this study and insight into the available literature. The researcher discovered that there are numerous studies published on PA and innovation, but that none of the scholarly work has explicitly investigated the PA-innovation link from a quantitative standpoint. Conclusive evidence of the importance of PA is not available, nor of which elements of PA are important in relation to innovation. This indicates an apparent gap in the current body of knowledge which the researcher has addressed. This information is of significance to the researcher and the academic community as it positions the research in the body of knowledge with regard to antecedents to innovation.

This research is further significant as - in a manner not previously employed - it emphasises the relative importance of PA systems as a cost item alongside other HRPs. Organisations devote many resources to PA, and given the popularity of such practices, it is presumed that PAs do contribute to individual and organisational success (Grote, 1996; Khoury, & Analoui, 2004; Murphy, Cleveland, & Hanscom, 2017; Nickols, 2007). Therefore, there is a need to study the link between PA and innovation empirically, to investigate the relative effect of PA on innovation, and to detail the importance of the various elements of PA, while also describing the relative significance of PA given the presence of other human resource variables. If the relationship between PA and innovation is not understood in relative terms, there may be a waste of organisational resources which, in turn, will impede the success of the organisation.

In an attempt to report on and empirically investigate the magnitude of the effect of PA on innovation, the researcher will synthesise literature on and empirically investigate and present evidence concerning - the link between PA and innovation (and its relative influence, given non-human resource antecedents) both across employees (in general) and within (specific) organisations. The researcher will further endeavour to identify and quantify PA practices which

enhance innovation. Achieving these research objectives will provide proof as to whether there is a link between PA and innovation, and will improve on the current knowledge base. In addition, the magnitude of this link, if it is established, will also be reported. This will provide managers with valuable evidence-based information about the PA-innovation link if it is shown to exist. It may also assist managers and human resource practitioners to identify which PA practices if any, enhance innovation. The identified practices will allow human resource practitioners and managers to enrich their current PA processes in an effort to increase innovation. The overall aim is to quantify and determine the magnitude of the relationship which human resource practitioners' claim exists.

The research is significant as it presents the positioning of PA within and across organisations, something which has not been reported upon in previous studies. In an effort to report on and empirically study the relative magnitude of the influence of PA, given other HRPs, on innovation, the researcher will synthesise literature on, as well as empirically investigate and present evidence on the link between PA and innovation (and its relative influence, given other human resource antecedents), both across employees (in general) and within (specific) organisations. The researcher will further try to define the relative role of PAs in the bouquet of HRPs towards innovation. Achieving these research objectives will provide managers with valuable information with regard to PA and the other HRPs. It will also enhance the existing literature. The researcher will, also, attempt to identify which HRPs influence innovation and to what degree.

This research is important as it presents a unique model on the PA-innovation link, one in which theorised links are statistically tested. The researcher will attempt to empirically investigate and present evidence on the link between PA and innovation, given moderation and mediation variables for the eighth research objective. Performing this investigation will complement the current understanding on the topic. It will similarly offer valuable evidence-based information to managers and human resource practitioners on the effect of PA on innovation, given mediators such as engagement and commitment.

This research is significant as it makes substantial and implementable managerial recommendations. The results specify the relative importance of PA, have the potential to benefit all business stakeholders, and may also assist managers, human resource practitioners, and

researchers in focusing on appropriate, evidence-based information when trying to enhance innovation at the employee and organisational level. No previous research has discussed the role of PA as an antecedent to innovation in this degree of detail or contextualised the research as has been done here.

## **1.5 Research constraints**

The researcher has detailed the scope and, delineations, as well as limitations of the research.

### **1.5.1 Scope and delineations of the study**

The relationship between PA and innovation was investigated within the South African setting. The investigation was confined to the use of survey data for South African organisations only. The researcher adopted this approach to restrict the cost and time implications that would have been involved in trying to go beyond South Africa.

The study focused only on PA and a few antecedents to innovation. The selection of variables was based on their manageability - being influenced by managerial interventions. The research included non-human resource antecedents as well as human resource antecedents to innovation. It is acknowledged that not all antecedents to innovation were included in this investigation.

The study focused on the views of employees regarding the realities in the workplace. The focus on perceptions is justifiable as perception is viewed as reality (Bjerre, 2011) at a given point in time in society. The focus was on employees as respondents, as it is respondents' perceptions which influence innovation.

Information was gathered using surveys alone. A focus on surveys is justified as the research entailed quantifying the importance of PA as an antecedent to innovation. Generating numbers and applying statistics was regarded as the most suitable approach to relate the different antecedents and draw conclusions across organisations.

### **1.5.2 Limitations of the study**

The researcher limited the search to full-text articles in peer-reviewed and scholarly journals. The researcher utilised four of the most popular and comprehensive academic databases in Business

Management (EBSCOhost, Google Scholar, ProQuest and Sabinet). However, limiting the search to these databases only could have resulted in pertinent literature being excluded from this review.

The exclusive use of respondents' perceptions in this study posed a further limitation. The results may have been more explanatory had managers been included in the reporting or had organisational statistics, such as registered patents, been used. Therefore, multi-source and multi-method research are suggested to future researchers.

This was a cross-sectional study which intended to describe the impact of PA on innovation. Even though such methodologies are often used, and that structural equation modelling allows researchers to make such claims, doing interventions and collecting longitudinal data would have yielded much more valuable results.

## **1.6 Theoretical framework**

Critical rationalism was an appropriate philosophy for adoption in this study given the nature of the investigation. Critical rationalism is an epistemological philosophy developed by Karl Popper (Ormerod, 2009), which urges researchers to question everything, as well as challenge prevailing views and ideas (Higgs, & Smith, 2006). Higgs and Smith (2006) further add that critical rationalism is similar to a trial and error approach, where the researcher begins with an idea and then tests this idea against reality to determine if the idea is true or false. In this study, it is assumed that PA, as well as other HRPs, are antecedents to individual innovation in the workplace. This theory was empirically investigated, testing the question of the importance of PA both within and across South African organisations.

Also applicable as a theoretical framework to this study was the general systems theory. The general systems theory is a theoretical framework suggested by Ludwig von Bertalanffy, which proposes that life is a complex system of which we are a part (Higgs, & Smith, 2006). Higgs and Smith (2006), Kast and Rosenzweig (1972) as well as Teece (2018) add that general systems theory is also synonymous with entirety and organising principles, with phenomena comprised of a number of fragments that form a complete unit. In this research, it is assumed that all HRPs are related and interact with other organisational variables, such as the levels of innovation displayed. The input-transformation-output model, an important feature in general systems theory, and

commonly being used in the human resources management environment (Cascio, 2010), specifies an entity's dynamic relationship with its surroundings, which can accept inputs, convert these inputs, and yield outputs (Kast, & Rosenzweig, 1972). This theory explains the expected influence of interventions, such as PA, as well as the other antecedents to innovation, to result in specific outputs, in the case of this study.

## **1.7 Layout of this thesis**

This thesis consists of five main chapters as detailed below.

### **Chapter one: Research orientation**

This first chapter of the thesis focuses on highlighting the problem and bringing to the surface, the research aim and objectives. It is an orientation to the study and presents the background, research problem, aim and objectives, significance, and constraints of this research.

### **Chapter two: Literature review**

Chapter two focuses on a literature review and on highlighting PA and innovation, as well as HRPs and innovation, as major aspects which formed the foundation of the study.

### **Chapter three: Research methodology**

Chapter three of the thesis details the research methodology applied in this study. The principal aim of this chapter is to outline the research approach, measurement instruments, data, and the statistical analysis of the study.

### **Chapter four: Presentation and analysis of results**

Chapter four is made up of the presentation and analysis of results. In this chapter, a record of the analysis and results is provided.



## **Chapter five: Discussion, conclusions and recommendations**

The fifth chapter concludes the research with an in-depth discussion of the results, their link to the literature, and the set of objectives. The conclusions and recommendations are presented in the fifth and final chapter of this thesis.

## **CHAPTER 2: LITERATURE REVIEW**

Three matters are addressed in this chapter. Firstly, literature regarding the outcomes of PAs is presented, reporting on the hypotheses typically tested on the impact of PA on innovation, critically analysing and synthesising these. The next matter reported on is the empirical evidence of the existence of the PA-innovation link. It thus details which PA-innovation hypotheses were indeed confirmed. The third part of this chapter is devoted to PA-innovation literature specific to each of the five empirical objectives stated in the introductory chapter. This chapter is concluded with a synthesis of what was found.

### **2.1 Foundational literature**

In this section, PA and innovation, as well as HRP and innovation, are discussed. Firstly, the concepts are defined and typologies are provided. Then models of PA and HRP and innovation are discussed. Hypotheses on the relationship between PA and HRPs are also presented. This discussion is focused on the structure of the body of knowledge as documented by De Vos, Strydom, Fouche and Delport (2011) and Mouton (1996).

The literature review presented below follows the systematic literature review methodology of Badger, Nursten, Williams and Woodward (2000), and Nightingale (2009). Boland, Cherry and Dickson (2014) and Gough, Oliver, and Thomas (2012) agree that a systematic review is a literature review with the purpose of reaching a more definitive, all-encompassing and consistent representation of the specific subject being researched than is possible from individual studies. Boland, Cherry and Dickson (2014) further emphasise that systematic reviews are thought to be the most appropriate method to synthesise the outcomes of numerous studies exploring the same inquiries.

The search strategy followed was to include synonyms for PA, HRP and innovation, to ensure a comprehensive search. The search was limited to full text articles in peer-reviewed and scholarly journals. The researcher utilised four of the most popular and comprehensive academic databases in Business Management (EBSCOhost, Google Scholar, ProQuest and Sabinet). No time limit or language restriction was specified in the search, thus ensuring that all available literature on the specific subject would be uncovered.

### **2.1.1 Concepts**

Mouton (1996: 180) states that “concepts act as the ‘carriers’ of meaning, that is, they enable us to identify and refer to social phenomena (suicidal acts, personality disorders, population characteristics) by defining the characteristic features of such phenomena”. De Vos, Strydom, Fouche and Delpont (2011) argue that a concept is a classification of experiences, or views and opinions. In this section, concepts associated with PA, HRPs and innovation are presented. These concepts were identified by synthesising words or phrases presented in five contemporary thesauruses.

#### **2.1.1.1 Performance appraisal**

The EBSCOhost thesaurus (2016) lists employees’ rating of performance and performance evaluation as synonyms for PA. However, the thesaurus of Educational Resources Information Centre descriptors lists only personnel evaluation as a synonym for PA (Houston, 2001). Meanwhile, the English Dictionary (2016) lists a number of synonyms for PA, i.e., performance review, performance evaluation, employee appraisal, performance assessment and development discussion. The ProQuest thesaurus (2016) lists the following as synonyms for PA: employee appraisal, employee rating, employees’ rating of performance, performance review of employees and personnel evaluation. Furthermore, the Microsoft Word (2010) thesaurus lists only one synonym for PA, namely, employee assessment.

From the aforementioned, it is clear that employees’ rating of performance, performance evaluation, performance review, performance assessment, development discussion, employee assessment, annual appraisal, employee evaluation, merit evaluation, merit rating, employee rating, employee appraisal, staff assessment, personnel evaluation and performance review of employees are commonly associated with PA. These words could thus be seen as representative of PA.

#### **2.1.1.2 Human resource practice**

The EBSCOhost thesaurus (2016), the thesaurus of Educational Resources Information Centre descriptors (Houston, 2001), the English Dictionary (2016), the Microsoft Word (2010) thesaurus and the ProQuest thesaurus (2016) contain no listed synonyms for HRPs.

### **2.1.1.3 Innovation**

The EBSCOhost thesaurus (2016) lists creativity, organisational development, research and development, organisational behaviour, and technology as synonyms for innovation. The thesaurus of Educational Resources Information Centre descriptors lists a number of synonyms for innovation, such as: experiments, technological literacy, resistance to change, theory-practice relationship, adoption (ideas), research and development, research, demonstration programs, change, development, technology transfer, improvement, and discovery process (Houston, 2001). However, the English Dictionary (2016) lists alteration, change, departure, freshness, introduction, modernism, modernisation, newness, novelty, originality, revolution, transformation, uniqueness, upheaval, and variation as synonyms for innovation. The Microsoft Word (2010) thesaurus lists novelty, invention, revolution, origination, modernisation, improvement, advance, modernism, and originality as a synonym for innovation. The ProQuest thesaurus (2016) lists the following as synonyms for innovation: absorptive capacity, industrial research, inventions, product development, research and development, serendipity, and technological change.

From the aforementioned, it is clear that absorptive capacity, adoptions (ideas), advance, alteration, change, creativity, demonstration programs, departure, theory practice relationship, research and development, development, discovery process, resistance to change, experiments, freshness, improvement, industrial research, introduction, invention, modernisation, modernism, newness, novelty, organisational behaviour, organisational development, originality, origination, product development, research, revolution, serendipity, technological change, technological literacy, technology, transformation, uniqueness, technology transfer, upheaval, and variation are all commonly associated with innovation. These words can thus be seen as representative of innovation.

### **2.1.2 Definitions**

Mouton (1996) explains that a definition is an explicit declaration or description of the meaning of a term. Locating a standard definition of a concept is central to the development of the body of knowledge around that concept. In this regard, a search was conducted to locate at least ten definitions of the concept. Definitions provided or quoted in research conducted over the past ten

years are listed below. Secondary sources are also listed here, as this may be the route to identifying the seminal authors.

### **2.1.2.1 Definitions of performance appraisal**

Definition 1: Aguinis, Joo and Gottfredson (2011: 504) state that “Performance appraisal is the depiction of the strengths and weaknesses of employees in a non-continuous manner, typically just once a year”.

Definition 2: Agyen-Gyasi and Boateng (2015: 60) state that “Performance appraisal is the process by which an individual’s work performance in an organisation or corporate entity is assessed. It is the formal process of observing, evaluating, assessing and rating the performance of individuals by their managers. This is usually done on an annual basis with the primary objective of improving the performance of the individual and the institutions”.

Definition 3: Deepa, Palaniswamy and Kuppusamy (2014: 72) state that “Performance appraisal is a formal, structured system of measuring and evaluating an employee's job related behaviours and outcomes as well as to discover how and why the employee is presently performing on the job and how the employee can perform more effectively in the future”.

Definition 4: Espinilla, de Andres, Martinez and Martinez (2013: 459) state that “Performance appraisal is a key tool in companies that provides information about employees performance in order to make important decisions, such as salary adjustments, promotions, identification of training and development needs, documentation of performance levels or behaviours that may cause firing or sanctions”.

Definition 5: Fatma (2016: 338) states that “Performance appraisal is a process that involves determining and communicating to an employee, how he is performing the job and ideally establishing a plan of improvement”.

Definition 6: Hong, Hao, Kumar, Ramendran and Kadiresan (2012: 65) state that “Performance appraisal is a process of inspecting and evaluating an individual’s performance in his duty to facilitate the decision of career development of the individual”.

Definition 7: Khan (2013: 68) states that “Performance appraisal may be defined as a structured formal interaction between a subordinate and supervisor, that usually takes the form of a periodic interview (annual or semi-annual), in which the work performance of the subordinate is examined and discussed, with a view to identifying weaknesses and strengths as well as opportunities for improvement and skills development”.

Definition 8: Latham and Wexley (1994), as cited by Zheng, Zhang and Li (2012: 732), state that “Performance appraisal is a set of structured formal interactions between a subordinate and a supervisor, usually in the form of a periodic interview, in which the performance of the subordinate is reviewed and discussed, with an emphasis on identifying weaknesses and strengths as well as opportunities for performance improvement and skill development”.

Definition 9: Muller, Bezuidenhout and Jooste (2011: 564) state that PA is the “process of observing and evaluating an employee’s performance, recording the assessment, and providing feedback to the employee”.

Definition 10: Phin (2015: 97) states that “Performance appraisal is a method of evaluating the behaviour of employees in the workplace. It includes both the quantitative and qualitative aspects of employee job performance. It is a process that involves determining and communicating to an employee how he or she is performing the job, and, ideally, establishing a plan for improvement”.

From the list of definitions, clear similarities emerged. A comprehensive (though not exhaustive) definition of PA could read as follows: PA refers to an officially organised means (Deepa, Palaniswamy, & Kuppusamy, 2014) that managers use (Agyen-Gyasi, & Boateng, 2015) annually (Aguinis, Joo, & Gottfredson, 2011; Agyen-Gyasi, & Boateng, 2015; Khan, 2013; Zheng, Zhang, & Li, 2012), to gauge a subordinate’s actual performance (Fatma, 2016; Hong, Hao, Kumar, Ramendran, & Kadiresan, 2012; Muller, Bezuidenhout, & Jooste, 2011; Phin, 2015), as well as strengths and weaknesses (Aguinis, Joo, & Gottfredson, 2011; Agyen-Gyasi & Boateng, 2015) in an effort to develop (Agyen-Gyasi, & Boateng, 2015; Fatma, 2016; Hong, Hao, Kumar, Ramendran, & Kadiresan, 2012; Khan, 2013; Phin, 2015; Zheng, Zhang, & Li, 2012) and reward (Espinilla, de Andres, Martinez, & Martinez, 2013) the employee.

It becomes important to remove all the references from the above definition, for the sake of clarity and to make sure the sentence is cohesive. Therefore, without the references, the definition reads as follows: PA refers to an officially organised means that managers use annually, to gauge a subordinate's actual performance, as well as strengths and weaknesses in an effort to develop and reward the employee.

### **2.1.2.2 Definitions of human resource practice**

Definition 1: Li, Qin, Jiang, Zhang and Gao (2015: 237) state that HRPs are “practices focusing on employees’ human capital development”.

Definition 2: Florea, Cheung and Herndon (2013: 394) define HRPs as “retaining, motivating, empowering, and developing employees”.

Definition 3: Ilhaamie (2015: 2) defines HRPs as “the intangible asset of an organisation, i.e., human capital, is satisfied at work and could be motivated to exert effort to the maximum extent”.

Definition 4: Ihionkhan and Aigbomian (2014: 15) state that HRPs are “organisational activities that are directed at managing the pool of human resources and ensuring that the resources are employed towards the fulfilment of organisational goals”.

Definition 5: Akinlade and Shalack (2016: 2) state that HRPs are defined as “internally consistent HRPs designed to attract, develop and retain volunteers, and motivate their commitment to the organisation's mission”.

Definition 6: Delery and Doty (1996), as cited by Ling and Nasurdin (2011: 157), state that HRPs are defined “as a set of internally consistent policies and practices designed and implemented to ensure that a firm’s human capital contribute to the achievement of its business objectives”.

Definition 7: Schuler and Jackson (1987), as cited by Ling and Nasurdin (2011: 157), state that HRPs are defined “as a system that attracts, develops, motivates, and retains employees to ensure the effective implementation and the survival of the organisation and its members”.

Definition 8: Osman, Ho and Galang (2011: 41) state that “Human resource practices include determining human resource needs, recruiting, screening, training, rewarding, appraising and also attending to labour relations, health and safety and fairness concerns”.

Definition 9: Castrogiovanni and Kidwell (2010), as cited by Pek-Greer, Wallace and Al-Ansaari (2016: 4), state that “Human resources practices are crucial for gaining a sustainable competitive advantage for the organisation and for the satisfaction of individual employee needs”.

Definition 10: Sikyr (2013: 43) states that HRPs are defined as “achieving desired employee abilities, motivation and performance”.

From the list of definitions, clear similarities emerged. A comprehensive (though not all inclusive) definition of HRPs could read as follows: HRPs refer to an organisations system of activities that are focused (Ihionkhan, & Aigbomian, 2014; Ling, & Nasurdin, 2011) on attracting (Akinlade, & Shalack, 2016; Ling, & Nasurdin, 2011), recruiting (Osman, Ho, & Galang, 2011), screening (Osman, Ho, & Galang, 2011), developing (Akinlade, & Shalack, 2016; Florea, Cheung, & Herndon, 2013; Ling, & Nasurdin, 2011), motivating (Akinlade, & Shalack, 2016; Florea, Cheung, & Herndon, 2013; Ilhaamie, 2015; Ling, & Nasurdin, 2011; Sikyr, 2013), training (Osman, Ho, & Galang, 2011), empowering (Florea, Cheung, & Herndon, 2013), rewarding (Osman, Ho, & Galang, 2011), retaining (Akinlade, & Shalack, 2016; Florea, Cheung, & Herndon, 2013; Ling, & Nasurdin, 2011), and appraising (Osman, Ho, & Galang, 2011) employees in an effort to drive the organisations mission (Akinlade, & Shalack, 2016) and goals (Ihionkhan, & Aigbomian, 2014) to achieve sustained competitive advantage (Pek-Greer, Wallace, & Al-Ansaari, 2016) and ensuring organisational survival (Ling, & Nasurdin, 2011).

It becomes important to remove all the references from the above definition, for the sake of clarity and to make sure the sentence is cohesive. Therefore, without the references, the definition reads as follows: HRPs refer to an organisations system of activities that are focused on attracting, recruiting, screening, developing, motivating, training, empowering, rewarding, retaining, and appraising employees in an effort to drive the organisations mission and goals to achieve sustained competitive advantage and ensuring organisational survival.



### **2.1.2.3 Definitions of innovation**

Definition 1: Robbins (1991), as cited by Wu, Sears, Coberley and Pope (2016: 36), states that “Innovation refers to an application of a new idea to develop or modify a product, process, or service”.

Definition 2: Woodman, Sawyer and Griffin (1993), as cited by Choi, Moon and Ko (2013), state that innovation is defined as “the production of a valuable, useful new product, service idea, procedure, together in a complex social system”.

Definition 3: García-Morales, Lloréns-Montes and Verdú-Jover (2008: 300) state that “innovation is a new idea, method or device, or an act of creating a new product, service or process”.

Definition 4: Tidd and Bessant (2009: 16) state that “innovation is a process of turning opportunity into new ideas and of putting these into widely used practice.”

Definition 5: Bledow, Frese, Anderson, Erez and Farr (2009: 305) state that innovation is “the development and intentional introduction of new and useful ideas by individuals, teams, and organisations”.

Definition 6: Kahn (2012: 454) defines innovation as “a new idea, method, or device. The act of creating a new product or process, which includes invention and the work required to bring an idea or concept to final form.”

Definition 7: Rothaermel (2013: 172) states that innovation is “The commercialisation of any new product, process, or idea, or the modification and re-combination of existing ones.”

Definition 8: McKinley, Latham and Braun (2014: 91) define innovation as “any novel product, service, or production process that departs significantly from prior product, service, or production process architectures.”

Definition 9: Lafley and Charan (2008: 21) state that “innovation is the conversion of a new idea into revenues and profits.”

Definition 10: Baregheh, Rowley and Sambrook (2009: 1334) state that “Innovation is the multi-stage process whereby organisations transform ideas into new or improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.”

From the list of definitions, clear similarities emerged. A comprehensive (not all inclusive) definition of innovation could read as follows: Innovation refers to a process (Tidd, & Bessant, 2009) of development (Bledow, Frese, Anderson, Erez, & Farr, 2009) and application (Wu, Sears, Coberley, & Pope, 2016) or introduction (Bledow, Frese, Anderson, Erez, & Farr, 2009) of new (Bledow, Frese, Anderson, Erez, & Farr, 2009; García-Morales, Lloréns-Montes, & Verdú-Jover, 2008; Kahn, 2012; Lafley, & Charan, 2008; Rothaermel, 2013; Tidd, & Bessant, 2009; Wu, Sears, Coberley, & Pope, 2016) and useful ideas (Baregheh, Rowley, & Sambrook, 2009; Bledow, Frese, Anderson, Erez, & Farr, 2009) by individuals, teams, or organisations (Bledow, Frese, Anderson, Erez, & Farr, 2009) to develop, modify (Rothaermel, 2013; Wu, Sears, Coberley, & Pope, 2016), or produce valuable (Choi, Moon, & Ko, 2013) products, processes, or services (Baregheh, Rowley, & Sambrook, 2009; Choi, Moon, & Ko, 2013; García-Morales, Lloréns-Montes, & Verdú-Jover, 2008; Kahn, 2012; McKinley, Latham, & Braun, 2014; Rothaermel, 2013; Wu, Sears, Coberley, & Pope, 2016) in an effort to compete successfully in the marketplace (Baregheh, Rowley, & Sambrook, 2009) thereby, maximising revenue and profits (Lafley, & Charan, 2008).

It becomes important to remove all the references from the above definition, for the sake of clarity and to make sure the sentence is cohesive. Therefore, without the references, the definition reads as follows: Innovation refers to the development and application or introduction of new and useful ideas by individuals, teams, or organisations to develop, modify, or produce valuable products, processes, or services in an effort to compete successfully in the marketplace thereby, maximising revenue and profits.

### **2.1.3 Typologies**

According to Caves (2006) and Croft (2003), typologies refer to the grouping of the specific phenomenon into types, while Darity (2008) also suggests that typologies may include elements or features. Livingstone (2008) refers to types as a number of objects or humans possessing

common characteristics or qualities that differentiate them as a collection or cluster. According to the Oxford Dictionary and Thesaurus, meanwhile, elements refer to a vital, indispensable, or irreducible component of a complex item (Livingstone, 2008). A list of five typologies is presented below and this is inclusive of both ways of perceiving typologies.

### **2.1.3.1 Types of performance appraisal**

Listed below are types of PAs provided in research conducted over the few years leading up to the present study. Firstly, Allen and Sawhney (2010), and Swanepoel, Erasmus and Schenk (2008) agree that PAs may be categorised into three areas, namely: the trait, behavioural and results methods. Then, Jafari (2002) comments that the three principal types of PAs utilised are the trait, behavioural and results techniques. Following this train of thought, Lussier and Hendon (2014) explain that the trait, behavioural and results methods are the three primary types of PA. Also, Middlesex Community College (2009) and the Society for Human Resource Management (2010) both indicate that trait, behavioural and results appraisals are the three leading types of PAs. According to authors Snell and Bohlander (2013), PA methods may be broadly characterised into the trait, behavioural and results methods.

From the aforementioned, it is clear that trait, behavioural and results methods are commonly associated with the three main types of PAs (Allen, & Sawhney, 2010; Jafari, 2002; Lussier, & Hendon, 2014; Middlesex Community College, 2009; Snell, & Bohlander, 2013; Society for Human Resource Management, 2010; Swanepoel, Erasmus, & Schenk, 2008).

### **2.1.3.2 Elements of performance appraisal**

A few authors have been cited below in an effort to list the different elements of PA. There are a few elements essential for an effective PA system, such as practicality, relevance, reliability, acceptability and sensitivity (Cascio, 2010; Swanepoel, Erasmus, & Schenk, 2008). According to Deb (2009), PAs are effective and valid when the elements of relevance, reliability, sensitivity, practicality and acceptability are present. Also, Mangkuprawira, Dhewi and Ma'arif (2006) indicate that the elements of an effective PA are: relevance, sensitivity, reliability, acceptability and practicality. Padhi and Sahu (2013) indicate that the five components present in effective PAs

are: relevance, sensitivity, reliability, acceptability and practicality. Furthermore, Sillup and Klimberg (2010) argue that effective PAs are relevant, reliable, acceptable, practical and sensitive.

From the aforementioned it is clear that relevance, sensitivity, reliability, acceptability and practicality (Cascio, 2010; Deb, 2009; Mangkuprawira, Dhewi, & Ma'arif, 2006; Padhi, & Sahu, 2013; Sillup, & Klimberg, 2010; Swanepoel, Erasmus, & Schenk, 2008) are commonly associated with effective PAs.

### **2.1.3.3 Types or elements of human resource practices**

Listed below are types or elements of HRPs provided in research conducted in the few years leading up to the present study.

- Guerci, Radaelli, Siletti, Cirella and Rami Shani (2013) argue that HRPs may be categorised into the following types or elements, namely: PA, staffing, employee involvement, rewards and compensation, job design, training and development, and industrial relations.
- Nyawose (2009) indicates that training and development, compensation and rewards, PA, supervisor support, recruitment and selection (staffing), diversity management, and communication and information sharing are types of HRPs.
- According to Cascio (2010), staffing, PA, information sharing, promotion systems, job design, attitude assessment, grievance procedures, incentive systems and labour-management participation are the different types of HRPs.
- Ihionkhan and Aigbomian (2014) suggest that staffing, selection, compensation, rewards, training, development, complaint management, advancement opportunities, PA, and overtime management are types of HRPs.
- Dash, Mohanty and Panda (2016) reason that HRPs include PA, job design, training and development, staffing, rewards, and employee involvement.

From the aforementioned it is clear that PA, staffing, compensation and rewards, training and development, job design, communication and information sharing, industrial relations, diversity management, supervisor support and employee involvement are commonly associated with the types or elements of HRPs (Cascio, 2010; Dash, Mohanty, & Panda, 2016; Guerci, Radaelli, Siletti, Cirella, & Rami Shani, 2013; Ihionkhan, & Aigbomian, 2014; Nyawose, 2009).

#### **2.1.3.4 Types or elements of innovation**

Listed below are types or elements of innovation provided in research conducted over the few years leading up to the present study. Firstly, Hwang, Hwang and Dong (2015) argue that the most common categories of innovation are product and process innovation. Then, Ceylan (2013) indicates that there are different kinds of innovation, namely: process, marketing, product and organisational. However, Bruni, Bonesso and Gerli (2017) explain that organisational, product, marketing, process, and strategic innovation are the different types of innovation in the current literature. Friedrich, Mumford, Vessey, Beeler and Eubanks (2010) suggest that process and product innovation are the primary types of innovation. Edwards-Schachter (2018), meanwhile, proposes ten types of innovation, i.e., technological, product, process, service, business model, disruptive, radical, design-driven, social, and responsible innovation.

From the aforementioned it is clear that product and process innovation are commonly associated with the central types or elements of innovation (Bruni, Bonesso, & Gerli, 2017; Ceylan, 2013; Edwards-Schachter, 2018; Friedrich, Mumford, Vessey, Beeler, & Eubanks, 2010; Hwang, Hwang, & Dong, 2015).

#### **2.1.4 Models**

Dube and Legros (2014) and Thietart (2001) reason that a model illustrates how different elements are related by relationships. However, De Vos, Strydom, Fouche and Delpont (2011) suggest that a model is a depiction of reality.

##### **2.1.4.1 Models for performance appraisal and innovation**

This portion of the research focuses on the concepts of PA and innovation, and particularly the “other” concepts which are included in models with these variables. The reason behind finding these “other” variables was to identify the concepts typically included in a PA-innovation model. The strategy followed was to find a reasonable number of research papers, which reported on words representative of PA, as well as innovation, in their titles, and then find the “other” concepts which were included in the different models. Finding articles which used the exact word “innovation” was difficult, and resulted in the finding of only eighteen articles. As such, proxies for innovation were used in an attempt to find more articles. The reasoning was that the authors of

these articles would include those “other” concepts in the keywords of their respective articles if these might influence the relationship between PA and innovation. In Table 1 below, thirty-four research papers and their associated keywords are presented in chronological order.

**Table 1: Keywords included in articles on performance appraisal and innovation**

Article	Keywords – excluding PA
Chism, S.B. (2007). <i>Theories E and O and employee performance appraisals: A study of organisational development and transformational change</i> . Minneapolis: Capella University.	control systems, learning, organisations, PA, policies, quantitative analysis, statistics
Choi, B.K., Moon, H.K. & Ko, W. (2013). An organisation's ethical climate, <b>innovation</b> , and performance: Effects of support for <b>innovation</b> and <b>performance evaluation</b> . <i>Management Decision</i> , 51(6), 1250-1275. doi: 10.1108/MD-Sep-2011-0334	business performance, ethical climate, organisation’s innovation, performance evaluation, South Korea, innovation, support for innovation,
Cizek, G.J. & Wiggins, G. (1991). <b>Innovation</b> or enervation? <b>Performance assessment</b> in perspective. <i>The Phi Delta Kappan International</i> , 72(9), 695-699.	reforms, PA, educators, education policy, education
Claudet, J.G. (1999). An interpretive analysis of educator <b>change</b> processes in response to a program <b>innovation</b> : Implications for <b>personnel evaluation</b> . <i>Journal of Personnel Evaluation In Education</i> , 13(1), 47-69. doi: 10.1023/A:1008050105136	social and cultural mechanisms, change and organisational learning processes, educational personnel, personnel evaluation

Article	Keywords – excluding PA
Ding, J., Zheng, Q., Wang, X., Zhu, H. & Zhang, J. (2016). <b>Assessment of innovative performance</b> management in Chinese police system: A case study of Zhejiang province. <i>Public Personnel Management</i> , 45(1), 6-25. doi: 10.1177/0091026016630368	job satisfaction, evaluation of performance, social support, police organisation, innovation
Edwards, M.R. (1983). Productivity <b>improvement</b> through <b>innovations</b> in <b>performance appraisal</b> . <i>Public Personnel Management</i> , 12(1), 13-24.	administrative processes, organisational variables, productivity, innovation, PA
Gorin, S.N.S. & Weirich, T.W. (1995). <b>Innovation</b> use: <b>Performance assessment</b> in a community mental health center. <i>Human Relations</i> , 48(12), 1427-1453.	innovation use, mental health innovation, performance assessment,
Gray, P. (1992). District-level perspective on <b>innovative</b> approaches in <b>performance appraisal</b> : Integration and refinement. <i>Paper presented at the Annual Meeting of the American Educational Research Association</i> , (pp.1-14). San Francisco, USA.	educational innovation, elementary school teachers, evaluation methods, performance based assessment, school districts, secondary school teachers, teacher evaluation
Grossman, W. (1996). <i><b>Innovation, efficiency, and strategic performance evaluation in diversified firms</b></i> . Texas: Texas A&M University.	social sciences, agency theory, compensation, executive

Article	Keywords – excluding PA
<p>Gu, F. &amp; Zhang, L. (2011). Research on <b>performance evaluation</b> system of private enterprise based on increasing the capability of independent <b>innovation</b>. <i>In 2011 International Conference on Electronics, Communications and Control (ICECC)</i>, (pp.3271-3274). Zhejiang, China. doi: 10.1109/ICECC.2011.6068111</p>	<p>performance evaluation, technological innovation, performance assessment system, indexes, research and development, personnel economics, private enterprise, innovation</p>
<p>Harris, C. (1984). <i>Implementing a performance standards appraisal system: The elements of an organisation's structure and leadership style which influence its ability to adapt to innovation</i>. Utah: University of Utah.</p>	<p>PA, innovation, centralisation, formalisation, leadership</p>
<p>Hung, S., Chen, P. &amp; Chen, H. (2012). Improving <b>creativity performance assessment</b>: A rater effect examination with many facet Rasch model. <i>Creativity Research Journal</i>, 24(4), 345-357. doi: 10.1080/10400419.2012.730331</p>	<p>improving creativeness, facet Rasch model, creative studies, rater effect examinations, performance assessments, product assessment</p>
<p>Jończyk, J. &amp; Buchelt, B. (2015). <b>Employee appraisal</b> as the tool of the pro-<b>innovative</b> organisational culture formation in hospitals. <i>Journal of Intercultural Management</i>, 7(2), 135-150. doi: 10.1515/joim-2015-0015</p>	<p>organisational culture, PA, health care entities, innovative culture, employee appraisal, hospitals</p>
<p>Joy, L.W.III. (1997). An <b>innovative appraisal</b>/reward strategy for high-performance teams. <i>Hospital Material Management Quarterly</i>, 19(2), 16-22.</p>	<p>high-performance teams, human resource systems, peer PA, participatory management, PA, team</p>



Article	Keywords – excluding PA
Khoury, G.C. & Analoui, F. (2004). <b>Innovative</b> management model for <b>performance appraisal</b> : The case of the Palestinian public universities. <i>Management Research News</i> , 27(1), 56-73. doi: 10.1108/01409170410784356	Palestine, faculty members, management, Sofia, West bank, PA
Krogstad, U., Hofoss, D., Veenstra, M., Gulbrandsen, P. & Hjortdahl, P. (2005). Hospital quality <b>improvement</b> in context: A multilevel analysis of <b>staff job evaluations</b> . <i>Quality and Safety in Health Care</i> , 14(6), 438-442. doi: 10.1136/qshc.2005.014233	hospitals, nursing, medical personnel, safety engineering, health care
Liu, S.L. (2008). The impact of <b>research and development</b> on relative <b>performance evaluation</b> in the UK. <i>International Journal of Managerial Finance</i> , 4(4), 278-294. doi: 10.1108/17439130810902796	PA, research and development, accounting information
Mahmood, B., Zafar, M.I., Zafar, M.U. & Nawaz, H. (2010). Evaluation of employees thinking about <b>performance appraisals</b> , trainings and <b>development</b> in competitive era of globalisation: A study in export based textile. <i>Pakistan Journal of Agricultural Sciences</i> , 47(1), 66-71.	business values, appraisal system, training and development, personnel
Martin, C. & Guzman, E. (2005). <b>Performance evaluation</b> or standardised testing of aptitudes? <b>Innovations</b> at the margins Mexico's of school system. <i>International Journal of Educational Development</i> , 25(2), 145-155. doi: 10.1016/j.ijedudev.2004.11.018	foreign countries, urban areas, standardised tests, school effectiveness, rural areas, educational experience, academic achievement, educational change, educational plan
Michelson, E.S. (2006). Approaches to <b>research and development performance assessment</b> in the United States: An analysis of recent evaluation trends. <i>Science and Public Policy (SPP)</i> , 33(8), 546-560.	performance evaluation, government agencies, research and development, evaluation

Article	Keywords – excluding PA
Potocnik, K. & Anderson, N. (2012). Assessing <b>innovation</b> : A 360-degree <b>appraisal</b> study. <i>International Journal of Selection and Assessment</i> , 20(4), 497-509. doi: 10.1111/ijsa.12012	studies, innovations, job hunting, performance evaluation, self-evaluation, human resource management
Qian, Y. (2013). Empirical research on <b>performance evaluation</b> of financial support policy on process <b>innovation</b> of manufacturing industry. In <i>2013 International Management Science and Engineering Conference (ICMSE)</i> , (pp.1245-1251). Harbin, China. doi: 10.1109/ICMSE.2013.6586433	financial support policy, performance evaluation, process innovation
Rahman, M. & Hussain, M.M. (2011). The impact of information <b>technology</b> on <b>performance evaluation</b> in developing countries: An empirical study. <i>Journal of Knowledge Globalisation</i> , 4(1), 1-23.	process theory, information technology, performance evaluation, post-modernism
Rangriz, H. & Pashootanizadeh, H. (2014). Desirable system requirements for <b>employee performance evaluation</b> to establishment of meritocracy and continuous <b>improvement</b> by using TQMPE and AHP model. <i>Science, Technology and Arts Research Journal</i> , 3(3), 185-190. doi: 10.4314/star.v3i3.30	meritocracy system systematic thinking, performance evaluation, training and development
Rieck, W.A. (1989). <b>Staff evaluation</b> : Strategies for continuous instructional <b>improvement</b> . <i>Paper presented at the Annual Meeting of the National Association of Secondary School Principals</i> , (pp.1-46). New Orleans, USA.	formative evaluation, instructional improvement, job performance, personnel evaluation
Runfeng, Y. (2011). Influence of goal orientation in <b>performance appraisal</b> on staff <b>innovative</b> behaviour: mediating effect of <b>innovative</b> climate. <i>Proceedings of the 8<sup>th</sup> International Conference on Innovation and Management</i> , (pp.445-451). Kitakyushu, Japan.	PA, goal orientation, innovative climate, staff innovative behaviour

Article	Keywords – excluding PA
Rutherford, D. (1992). <b>Appraisal</b> in action: A case study of <b>innovation</b> and leadership. <i>Studies in Higher Education</i> , 17(2), 201-210. doi: 10.1080/03075079212331382667	job performance, middle management, personnel evaluation, personnel management, staff development
Ryakhovskaya, A.N., Gruzina, Y.M., Arsenova, E.V., Linder, N.V. & Pukhova, M.M. (2015). <b>Development</b> of methodology for <b>performance assessment</b> and the effectiveness of <b>innovation</b> activity. <i>Mediterranean Journal of Social Sciences</i> , 6(5 S4), 189-196. doi: 10.5901/mjss.2015.v6n5s4p189	efficiency, innovation activity, performance indicators
Scarpa, R. & Connelly, P.E. (2011). <b>Innovations in performance assessment</b> : A criterion based <b>performance assessment</b> for advanced practice nurses using a synergistic theoretical nursing framework. <i>Nursing Administration Quarterly</i> , 35(2), 164-173. doi: 10.1097/NAQ.0b013e31820fface	evaluation, innovative practice nursing, performance assessment
Silvestro, J.R. (1993). Video-based teacher <b>performance assessment</b> : <b>Innovations</b> in New York state teacher certification testing. <i>Paper presented at the Annual Meeting of the American Educational Research Association</i> , (pp.1-7). Atlanta, USA.	assessment of teaching skills performance, New York, performance based evaluation
Stern, S.E. (1999). Effects of <b>technology</b> on attributions of performance and <b>employee evaluation</b> . <i>Journal of Applied Social Psychology</i> , 29(4), 786-794. doi: 10.1111/j.1559-1816.1999.tb02024.x	job performance, evaluation, organisational behaviour, effects, employees, ability, technology

Article	Keywords – excluding PA
Vaia, G., Bisogno, M., & Bizzarri, G. (2015). How to drive <b>innovation</b> within outsourcing relations: The role of <b>performance evaluation</b> and management control systems. <i>In Achieving Success and Innovation in Global Sourcing: Perspectives and Practices</i> , (pp.142-155). La Thuile, Italy: Springer International Publishing. doi: 10.1007/978-3-19-26739-5_8	governance, return on investment, accounting, performance evaluation
Wu, H., Sears, L.E., Coberley, C.R. & Pope, J.E. (2016). Overall well-being and supervisor <b>ratings of employee performance</b> , accountability, customer service, <b>innovation</b> , prosocial behaviour, and self-development. <i>Journal of Occupational and Environmental Medicine</i> , 58(1), 35-40. doi: 10.1097/JOM.0000000000000612	accountability, innovation, customer service, prosocial behaviour, self-development, ratings of employee performance
Yousefi, R. & Ghajari, S. (2015). A review of human resource marketing and organisational learning on <b>employee performance</b> with mediating role of organisational <b>innovation</b> (Case study: Refah-Kargaran Bank). <i>Croizatia</i> , 92(1), 108-119.	human resource marketing, organisational learning, organisational innovation

From the aforementioned, it can be observed that PA (17 references – keywords: appraisal, appraisal system, employees’ appraisal, evaluation, evaluation method, formative evaluation, job performance, outsourcing performance evaluation, peer-performance appraisal, PA, performance assessment, performance based assessment, performance based evaluation, performance evaluation, performance evaluation system, personnel evaluation, and rating of employee performance) and innovation (15 references – keywords: change and organisational learning, educational innovation, improving creativeness, innovation, innovation activity, innovation use, innovative climate, innovative culture, organisation innovation, organisational behaviour, process innovation, research and development, staff innovative behaviour, technological innovation, and technology) is most referred to in the keywords. This was to be expected, as this was the primary focus of the articles, as per the titles.

Apart from references to PA and innovation, the next most common keywords found were linked or related to human resources (6 references – keywords: human resource management, human resource marketing, human resources systems, training and development, and self-development).

From the aforementioned, it seems that the models of PA and innovation are quite simple and, mostly include only the two variables. Mention of mediators and moderators seemed to be absent when performing this analysis. There appears, in research carried out to date, to have been a lack of complexity when investigating the PA and innovation link.

#### 2.1.4.2 Models for human resource practices and innovation

In the previous section, we focused on PA and innovation, while in this section we have expanded the focus and looked at HRPs and innovation. The aim, in this case, was similar, and this section focuses on the concepts of HRPs and innovation, and particularly the “other” concepts which are included in models with these variables. The reason behind finding these “other” variables was to identify the concepts typically included in a HRPs-innovation model. The strategy followed was to find a reasonable number of research papers which reported on both HRPs and innovation in their titles, and then to find the “other” concepts which were included in the different models. The reasoning was that the authors of these articles would include those “other” concepts in the keywords of their respective articles if these might influence the relationship between HRPs and innovation. In Table 2, below, sixty research papers and their associated keywords are presented in chronological order.

**Table 2: Keywords included in articles on human resource practices and innovation**

Article	Keywords – excluding HRPs
Abbaspour, P. (2015). Effect of strategic orientation and <b>HRM</b> strategies on organisational strategic performance: Examining mediating role of strategic learning and <b>innovation</b> . <i>An International Peer-reviewed Journal (Trends in Life Sciences)</i> , 4(4), 125-132.	strategies, learning, innovation, performance

Article	Keywords – excluding HRP
<p>Aktharsha, U.S. &amp; Sengottuvel, A. (2016). Knowledge sharing behaviour and <b>innovation</b> capability: <b>HRM practices</b> in hospitals. <i>SCMS Journal of Indian Management</i>, 13(1), 118-130.</p>	<p>human resource management practices, innovation capability, knowledge sharing behaviour</p>
<p>Al-bahussin, S.A. &amp; El-garaihy, W.H. (2013). The impact of <b>human resource management practices</b>, organisational culture, <b>organisational innovation</b> and knowledge management on organisational performance in large Saudi organisations: Structural equation modelling with conceptual framework. <i>International Journal of Business and Management</i>, 8(22), 1-19. doi: 10.5539/ijbm.v8n22p1</p>	<p>organisational culture, knowledge management, organisational performance, organisational innovation, human resource management practices</p>
<p>Al-Ghamdi, M., Abdel-Razek, R. &amp; Abdel-Razek, R. (2015). The impact of <b>human resource management</b> on technological <b>innovation</b> in Jubail primary industrial sector, Kingdom of Saudi Arabia. <i>International Journal of Business and Management</i>, 3(2), 1-17. doi: 10.20472/BM.2015.3.2.001</p>	<p>competitive advantage, human resource technology, industrial organisations, technological innovation, human resources management</p>
<p>Antonioli, D., Mancinelli, S. &amp; Mazzanti, M. (2013). Is environmental <b>innovation</b> embedded within high-performance organisational changes? The role of <b>human resource management</b> and complementarity in green business strategies. <i>Research Policy</i>, 42(4), 975-988. doi: 10.1016/j.respol.2012.12.005</p>	<p>complementarity, human resource management, high performance work practices, training, innovation survey, innovation</p>

Article	Keywords – excluding HRP
<p>Arvanitis, S., Seliger, F. &amp; Stucki, T. (2016). The relative importance of <b>human resource management practices</b> for <b>innovation</b>. <i>Economics of Innovation and New Technology</i>, 25(8), 769-800. doi: 10.1080/10438599.2016.1158533</p>	<p>cumulative effects, human resource management practices, innovation performance, workplace organisation</p>
<p>Aryanto, R., Fontana, A. &amp; Afiff, A.Z. (2015). Strategic <b>human resource management, innovation</b> capability and performance: An empirical study in Indonesia software industry. <i>Procedia – Social and Behavioural Sciences</i>, 211(1), 874-879. doi: 10.1016/j.sbspro.2015.11.115</p>	<p>innovation, innovation capability, innovation performance, strategic human resource management</p>
<p>Bai, J. &amp; Wang, W.H. (2016). The study of the <b>human resource practice</b> of breakthrough <b>innovation</b> and <b>micro-innovation</b> based on the theory of the AMO model. <i>Open Journal of Business and Management</i>, 4(3), 461-470. doi: 10.4236/ojbm.2016.43047</p>	<p>breakthrough innovation, micro-innovation</p>
<p>Bal, Y., Bozkurt, S. &amp; Ertemsir, E. (2014). A study on determining the relationship between strategic <b>HRM practices</b> and creating <b>innovation</b> in organisations. <i>The International Journal of Contemporary Management</i>, 13(2), 23-36.</p>	<p>strategic human resource management, innovation, competitive advantage, human resource management functions</p>
<p>Beugelsdijk, S. (2008). Strategic <b>human resource management practices</b> and product <b>innovation</b>. <i>Organisation studies</i>, 29(6), 821-847. doi: 10.1177/0170840608090530</p>	<p>innovation, human resource management, creativity</p>

Article	Keywords – excluding HRP
Camelo-Ordaz, C., Garcia-Cruz, J., Sousa-Ginel, E. & Valle-Cabrera, R. (2011). The influence of <b>human resource management</b> on knowledge sharing and <b>innovation</b> in Spain: The mediating role of affective commitment. <i>International Journal of Human Resource Management</i> , 22(7), 1442-1463. doi: 10.1080/09585192.2011.561960	affective commitment, innovation, human resource management practices, knowledge management
Ceylan, C. (2013). Commitment-based <b>HR practices</b> , different types of <b>innovation</b> activities and firm <b>innovation</b> performance. <i>International Journal of Human Resource Management</i> , 24(1), 208-226. doi: 10.1080/09585192.2012.680601	commitment, HRP, firm innovation performance, innovation activities
Chang, S., Gong, Y. & Shum C. (2011). Promoting <b>innovation</b> in hospitality companies through <b>human resource management practices</b> . <i>International Journal of Hospitality Management</i> , 30(4), 812-818. doi: 10.1016/j.ijhm.2011.01.001	incremental and innovation, staffing, HRP, training
Chen, C. & Huang, J. (2009). Strategic <b>human resource practices</b> and <b>innovation</b> performance – The mediating role of knowledge management capacity. <i>Journal of Business Research</i> , 62(1), 104-114. doi: 10.1016/j.jbusres.2007.11.016	knowledge management capacity, innovation performance, HRP
Cooke, F. & Saini, D. (2010). (How) Does the <b>HR</b> strategy support an <b>innovation</b> oriented business strategy? An investigation of institutional context and organisational practices in Indian firms. <i>Human Resource Management</i> , 49(3), 377-400. doi: 10.1002/hrm.20356	business strategy, human resource management, innovation, performance management, strategic management
Dalota, M. & Perju, A. (2010). <b>Human resources management</b> and the company's <b>innovation</b> . <i>Romanian Economic and Business Review</i> , 5(4), 122-131.	small and medium-sized enterprises, innovation, human resources



Article	Keywords – excluding HRP
Dalota, M. (2013). SMS's <b>innovation</b> and <b>human resources management</b> . <i>Romanian Economic and Business Review</i> , 203-210.	innovation, small to medium-sized enterprises, human resource management
De Saa-Perez, P. & Diaz-Diaz, N.L. (2010). <b>Human resource management</b> and <b>innovation</b> in the Canary Islands: An ultra-peripheral region of the European Union. <i>The International Journal of Human Resource Management</i> , 21(10), 1649-1666. doi: 10.1080/09585192.2010.500488	ultra-peripheral region, human resource management, innovation
De Winne, S. & Sels, L. (2010). Interrelationships between human capital, <b>HRM</b> and <b>innovation</b> in Belgian start-ups aiming at an <b>innovation</b> strategy. <i>International Journal of Human Resource Management</i> , 21(11), 1863-1883. doi: 10.1080/09585192.2010.505088	innovation, human capital, human resource management
Diaz-Fernandez, M., Bornay-Barrachina, M. & Lopez-Cabrales, A. (2015). <b>Innovation</b> and firm performance: The role of <b>human resource management practices</b> . <i>Evidence-based HRM</i> , 3(1), 64-80. doi: 10.1108/EBHRM-10-2012-0012	human resource management practices, high-performance organisations, processes of human resource management, work performance and productivity
Estrada, I., Martin-Cruz, N. & Perez-Santana, P. (2013). Multi-partner alliance teams for product <b>innovation</b> : The role of <b>human resource management</b> fit. <i>Innovation: Management, Policy &amp; Practice</i> , 15(2), 161-169. doi: 10.5172/impp.2013.15.2.161	multi-partner alliance teams, human resource management fit, multi-partner research and development alliances, climate for teamwork, product innovation

Article	Keywords – excluding HRP
Findikli, M.A., Yozgat, U. & Rofcanin, Y. (2015). Management examining organisational <b>innovation</b> and knowledge management capacity: The central role of strategic <b>human resources practices</b> . <i>Procedia – Social and Behavioural Sciences</i> , 181(1), 377-387. doi: 10.1016/j.sbspro.2015.04.900	exploration, knowledge sharing, exploitation, strategic human resources practices, knowledge application
Gil-Marques, M. & Moreno-Luzon, M.D. (2013). Driving <b>human resources</b> towards quality and <b>innovation</b> in a highly competitive environment. <i>International Journal of Manpower</i> , 34(8), 839-860. doi: 10.1108/IJM-07-2013-0183	human resource management, cultural change, incremental and radical innovation, total quality management, exploitation and exploration
Hashim, M.K., Ali, J., Fawzi, D.A. (2005). Relationship between <b>human resource practices</b> and <b>innovation</b> activity in Malaysian SMEs. <i>Jurnal Manajemen &amp; Bisnis Sriwijaya</i> , 3(6), 1-12.	human resource, innovation, small and medium enterprise
Jiang, J., Wang, S. & Zhao, S. (2012). Does <b>HRM</b> facilitate employee <b>creativity</b> and organisational <b>innovation</b> ? A study of Chinese firms. <i>International Journal of Human Resource Management</i> , 23(19), 4025-4047. doi: 10.1080/09585192.2012.690567	administrative innovation, employee creativity, human resource management, technological innovation
Jimenez-Jimenez, D. & Sanz-Valle, R. (2005). <b>Innovation</b> and <b>human resource management</b> fit: An empirical study. <i>International Journal of Manpower</i> , 26(4), 364-381. doi: 10.1108/01437720510609555	human resource management, innovation, Spain
Katou, A. (2008). <b>Innovation</b> and <b>human resource management</b> : The Greek experience. <i>Organizacija</i> , 41(3), 81-90. doi: 10.2478/v10051-008-0009-3	structural equation modelling, innovation, human resource management, causality

Article	Keywords – excluding HRP
Kim, D. & Choi, Y. (2014). Social exchange model between <b>human resource management practices</b> and <b>innovation</b> in software engineering. <i>Seoul Journal of Business</i> , 20(2), 49-69.	human resource management practice, social exchange theory, affective organisational commitment, innovative behaviour
Kong, E., Chadee, D. & Raman, R. (2013). Managing Indian IT professionals for global competitiveness: The role of <b>human resource practices</b> in developing knowledge and learning capabilities for <b>innovation</b> . <i>Knowledge Management Research &amp; Practice</i> , 11(4), 334-345. doi: 10.1057/kmrp.2012.21	HRPs, innovation, information technology professionals, knowledge and learning capabilities
Lau, C. & Ngo, H. (2004). The <b>HR</b> system, organisational culture, and product <b>innovation</b> . <i>International Business Review</i> , 13(6), 685-703. doi: 10.1016/j.ibusrev.2004.08.001	company performance, organisational culture, innovation, human resources
Laursen, K. & Foss, N.J. (2003). New <b>human resource management practices</b> , complementarities and the impact on <b>innovation</b> performance. <i>Cambridge Journal of Economics</i> , 27(2), 243-263.	evolutionary economics, innovation, organisational complementarities, human resource management practices,
Li, X., Qin, X., Jiang, K., Zhang, S. & Gao, F. (2015). <b>Human resource practices</b> and firm performance in China: The moderating roles of regional human capital quality and firm <b>innovation</b> strategy. <i>Management and Organisation Review</i> , 11(2), 237-261. doi: 10.1017/mor.2015.12	company performance, strategic human resource management, HRP, innovation strategy, human capital

Article	Keywords – excluding HRP
Ling, T.C. & Nasuridin, A.M. (2010). <b>Human resource management practices</b> and organisational <b>innovation</b> : An empirical study in Malaysia. <i>Journal of Applied Business Research</i> , 26(4), 105-116.	organisational innovation, human resource management practices
Ling, T.C. & Nasuridin, A.M. (2011). <b>Human resource management practices</b> and organisational <b>innovation</b> : Assessing the mediating role of knowledge management effectiveness. <i>Electronic Journal of Knowledge Management</i> , 9(2), 155-167.	human resource management practices, knowledge management effectiveness, process, product and administrative innovation
Looise, J.K. & Van Riemsdijk, M. (2004). <b>Innovating</b> organisations and <b>HRM</b> : A conceptual framework. <i>Management Revue</i> , 15(3), 277-287.	human resource management, innovation, network organisations
Lu, K., Zhu, J. & Bao, H. (2015). High-performance <b>human resource management</b> and firm performance: The mediating role of <b>innovation</b> in China. <i>Industrial Management &amp; Data Systems</i> , 115(2), 353-382. doi: 10.1108/IMDS-10-2014-0317	innovation, human resource management
Maes, J., Sels, L. & De Winne, S. (2006). <b>Innovation</b> as a corporate entrepreneurial outcome in newly established firms: A <b>human resource-based</b> view. <i>SSRN Electronic Journal</i> , 1(1), 1-29. doi: 10.2139/ssrn.873593	start-up, innovation, resource-based view, upper echelon, human capital
Maier, A., Brad, S., Nicoară, D. & Maier, D. (2014). <b>Innovation</b> by developing <b>human resources</b> , ensuring the competitiveness and success of the organisation. <i>Procedia - Social and Behavioural Sciences</i> , 109(1), 645-648. doi: 10.1016/j.sbspro.2013.12.521	innovation, framework, human resource development, organisational performance

Article	Keywords – excluding HRP
<p>Manafi, M. &amp; Subramaniam, I.D. (2015). Relationship between <b>human resources management practices</b>, transformational leadership, and knowledge sharing on <b>innovation</b> in Iranian electronic industry. <i>Asian Social Science</i>, 11(10), 358-385. doi: 10.5539/ass.v11n10p358</p>	<p>innovation, human resource management practices, knowledge sharing, transformational leadership</p>
<p>Maruyama, U.G.R. &amp; Braga, M.A.B. (2014). <b>Human resources strategic practices, innovation</b> performance &amp; knowledge management: Proposal for Brazilian organisations. <i>Independent Journal of Management &amp; Production</i>, 5(3), 710-732. doi: 10.14807/ijmp.v5i3.188</p>	<p>knowledge management, human resources strategic practices, innovation management</p>
<p>Matthew, A. (2014). <b>Human resource management</b>: The enabler of <b>innovation</b> in organisations. <i>BVIMR Management Edge</i>, 7(1), 53-59.</p>	<p>innovation, organisational culture, leadership, human resource management practices</p>
<p>Mavondo, F.T., Chimhanzi, J. &amp; Stewart, J. (2005). Learning orientation and market orientation: Relationship with <b>innovation, human resource practices</b> and performance. <i>European Journal of Marketing</i>, 39(11/12), 1235-1263. doi: 10.1108/03090560510623244</p>	<p>market orientation, human resource practices, learning, organisational performance, innovation</p>
<p>Nooshin, E. &amp; Hamid, N. (2011). Effect of <b>human resource management</b> activities to <b>innovation</b> in enterprises. <i>In 3rd International Conference on Information and Financial Engineering</i>, (pp.518-522). Shanghai, China.</p>	<p>effectiveness, activity, innovation, human resource management</p>
<p>Osoian, C. &amp; Petre, A. (2013). <b>Human resource management practices</b> and hotel <b>innovation</b>. <i>Studia Universitatis Babeş-Bolyai</i>, 58(3), 80-89.</p>	<p>innovation, selection, training, human resource</p>

Article	Keywords – excluding HRP
Perdomo-Ortiz, J., Gonzalez-Benito, J. & Galende, J. (2009). An analysis of the relationship between total quality management-based human resource management practices and innovation. <i>International Journal of Human Resource Management</i> , 20(5), 1191-1218. doi: 10.1080/09585190902850372	human resource management, innovation, quality, total quality management
Podmetina, D., Volchek, D., Dabrowska, J. & Fiegenbaum, I. (2013). <b>Human resource practices</b> and open <b>innovation</b> . <i>International Journal of Innovation Management</i> , 17(6), 1-22. doi: 10.1142/S1363919613400197	human capital, HRP, open innovation, internal and external openness, research and development co-operation
Prieto, I.M. & Pérez-Santana, M.P. (2014). Managing <b>innovative work behaviour</b> : The role of <b>human resource practices</b> . <i>Personnel Review</i> , 43(2), 184-208. doi: 10.1108/PR-11-2012-0199	HRP, management support, co-worker support, innovative work behaviour, supportive work environment, employee behaviour
Quiros, I.S. & Ronda, J.G. (2011). The relationship among <b>innovation</b> strategy, <b>human resources practices</b> and commitment generation in the biotechnology sector. <i>African Journal of Business Management</i> , 5(34), 13159-13168. doi: 10.5897/AJBM11.946	innovation strategy, commitment, HRP, biotechnology
Rosli, M.M. & Mahmood, R. (2013). Moderating effects of <b>human resource management practices</b> and entrepreneur training on <b>innovation</b> and small-medium firm performance. <i>Journal of Management and Strategy</i> , 4(2), 60-69. doi: 10.5430/jms.v4n2p60	human resource management practices, innovation, company performance, entrepreneur training

Article	Keywords – excluding HRP
Santiago, F. (2013). How <b>human resource management practices</b> contribute to learning for pharmaceutical <b>innovation</b> in Mexico: Drawing from internal and external sources of knowledge. <i>Latin American Business Review</i> , 14(3-4), 227-250. doi: 10.1080/10978526.2013.833473	capability building, human resource management, learning, pharmaceutical innovation
Sarti, D. & Torre, T. (2015). <b>Human resource management and innovation</b> : What lessons from Italian social enterprises? <i>Paper presented at the European Conference on Innovation and Entrepreneurship</i> , (pp.626-635). San Francisco, USA.	human resource management, service innovation, HRP
Searle, R.H. & Ball, K.S. (2003). Supporting <b>innovation</b> through <b>HR policy</b> : Evidence from the UK. <i>Creativity and Innovation Management</i> , 12(1), 50-62.	No keywords available in article
Soliman, F. (2011). Modelling the role of <b>human resources management</b> in the <b>innovation</b> chain. <i>International Employment Relations Review</i> , 17(2), 1-20.	No keywords available in article
Stock, R.M., Totzauer, F. & Zacharias, N.A. (2014). A closer look at cross-functional R&D cooperation for <b>innovativeness</b> : <b>Innovation-oriented</b> leadership and <b>human resource practices</b> as driving forces. <i>Journal of Product Innovation Management</i> , 31(5), 924-938. doi: 10.1111/jpim.12132	No keywords available in article
Tabasi, M.M., Vaezi, R. & Alvani, S.M. (2014). Relationship between strategic <b>human resource management practices</b> and organisational <b>innovation</b> with respect to the role of organisational learning. <i>Kuwait Chapter of the Arabian Journal of Business and Management Review</i> , 3(7), 170-185.	organisational innovation, strategic human resource practices, organisational learning
Veenendaal, A. & Bondarouk, T. (2015). Perceptions of <b>HRM</b> and their effect on dimensions of <b>innovative work behaviour</b> : Evidence from a manufacturing firm. <i>Management Revue</i> , 26(2), 138-160. doi: 10.1688/mrev-2015-02-Veenendaal	perceived HRP, innovative work behaviour, individual innovation

Article	Keywords – excluding HRP
Walsworth, S. & Verma, A. (2007). Globalisation, <b>human resource practices</b> and <b>innovation</b> : Recent evidence from the Canadian workplace and employee survey. <i>Industrial Relations</i> , 46(2), 222-240.	No keywords available in article
Wu, W.Y. & Lee, F.H. (2013). The influence of commitment-based <b>HR practices</b> and knowledge-sharing on employees' <b>innovation</b> performance. <i>African Journal of Business Management</i> , 7(24), 2381-2393. doi: 10.5897/AJBM2013.6979	commitment-based human resource practices, hierarchical linear model, innovation performance, knowledge-sharing
Zhou, Y., Hong, Y. & Liu, J. (2013). Internal commitment or external collaboration? The impact of <b>human resource management</b> systems on firm <b>innovation</b> and performance. <i>Human Resource Management</i> , 52(2), 263-28. doi: 10.1002/hrm.21527	innovation, human resource management, innovation, performance
Zontek, Z. (2016). The role of <b>human resources</b> in enhancing <b>innovation</b> in tourism enterprises. <i>Managing Global Transitions</i> , 14(1), 55-73.	tourism, innovation, human resources

This analysis yielded outcomes similar to those of the PA and innovation analysis. From the aforementioned, it can be observed that HRP (89 references – keywords: human resource management practices, human resource management, learning, knowledge sharing, training, knowledge management, human resource technology, human resources, high performance work practices, human resource management functions, selection, strategic human resource management, performance management, human capital, work performance and productivity, processes of human resource management, knowledge application, knowledge and learning capability, human resource development, human resource management fit, human resource management activity, management support, co-worker support, supportive work environment, employee behaviour and commitment-based HRP) and innovation (72 references – keywords: innovation, innovation capability, organisational innovation, technological innovation,



environmental innovation, innovation performance, breakthrough innovation, micro-innovation, innovation activities, incremental innovation, radical innovation, research and development, product innovation, exploration and exploitation innovation, administrative innovation, employee creativity, innovative work behaviour, innovation strategy, process innovation, innovation management, open innovation, service innovation and individual innovation) are most referred to in the keywords. This was to be expected as this was the primary focus of the articles, as per their titles.

Apart from references to HRPs and innovation, the next most common keywords found were linked or related to organisational performance (11 references – keywords: performance, organisational performance and competitive advantage).

From the aforementioned, it seems that the models of HRPs and innovation are quite simple and that, mostly, they include only the two variables. Mention of mediators and moderators seemed to be absent when conducting this analysis and it appears that there has, to date, been a lack of complexity in investigating the PA and innovation relationship.

### **2.1.5 Hypotheses**

Lee, da Silveira Nunes Dinis, Lowe and Anders (2016: 50) define “a hypothesis as a statement of an educated hunch (i.e., the relationship between the variables) or speculation about a presumed relationship in the real world”. According to authors Altares, Copo, Gabuyo, Laddaran, Mejia, Policarpio, Sy, Tizon and Yao (2003), a hypothesis is a tentative declaration, account, or claim about variables.

#### **2.1.5.1 Hypotheses for performance appraisal and innovation**

This section focuses on finding those hypotheses which concentrate primarily on PAs and innovation. In Table 3 below, hypotheses posed in articles on PA and innovation are presented. Only eleven were found that met the criteria for inclusion.

**Table 3: Hypotheses regarding performance appraisal and innovation**

Articles including hypotheses/propositions and correlation
<p>Ding, J., Zheng, Q., Wang, X., Zhu, H. &amp; Zhang, J. (2016). <b>Assessment of innovative performance</b> management in Chinese police system: A case study of Zhejiang province. <i>Public Personnel Management</i>, 45(1), 6-25. doi: 10.1177/0091026016630368</p> <p>Hypothesis: Three hypotheses were formulated as part of this study, but none were directly related to the effect of PA on innovation.</p> <p>Correlation: Not applicable in this case.</p>
<p>Gorin, S.N.S. &amp; Weirich, T.W. (1995). <b>Innovation</b> use: <b>Performance assessment</b> in a community mental health center. <i>Human Relations</i>, 48(12), 1427-1453.</p> <p>Hypothesis: Four hypotheses were formulated as part of this study, but none were directly related to the effect of PA on innovation.</p> <p>Correlation: No correlation analysis was performed as part of this study.</p>
<p>Grossman, W. (1996). <i><b>Innovation, efficiency, and strategic performance evaluation in diversified firms</b></i>. Texas: Texas A&amp;M University.</p> <p>Hypothesis: Eleven hypotheses were formulated as part of this study, but none were directly related to the effect of PA on innovation.</p> <p>Correlation: Not applicable in this case.</p>
<p>Harris, C. (1984). <i>Implementing a <b>performance standards appraisal</b> system: The elements of an organisation's structure and leadership style which influence its ability to adapt to <b>innovation</b></i>. Utah: University of Utah.</p> <p>Hypothesis: Eleven hypotheses were formulated as part of this study, but none were directly related to the effect of PA on innovation.</p> <p>Correlation: Not applicable in this case.</p>
<p>Hung, S., Chen, P. &amp; Chen, H. (2012). Improving <b>creativity performance assessment</b>: A rater effect examination with many facet Rasch model. <i>Creativity Research Journal</i>, 24(4), 345-357. doi: 10.1080/10400419.2012.730331</p>

### Articles including hypotheses/propositions and correlation

Hypothesis: Six hypotheses were formulated as part of this study, but none were directly related to the effect of PA on innovation.

Correlation: No correlation analysis was performed as part of this study.

Mahmood, B., Zafar, M.I., Zafar, M.U. & Nawaz, H. (2010). Evaluation of employees thinking about **performance appraisals**, trainings and **development** in competitive era of globalization: A study in export based textile. *Pakistan Journal of Agricultural Sciences*, 47(1), 66-71.

Hypothesis: One hypothesis was formulated as part of this study, but it was not directly related to the effect of PA on innovation.

Correlation: Not applicable in this study.

Runfeng, Y. (2011). Influence of goal orientation in **performance appraisal** on staff **innovative** behaviour: mediating effect of **innovative** climate. *Proceedings of the 8<sup>th</sup> International Conference on Innovation and Management*, (pp.445-451). Kitakyushu, Japan.

Hypothesis: Six hypotheses were formulated as part of this study, but none were directly related to the effect of PA on innovation. However, a hypothesis was formulated that development oriented PA is positively correlated with the organisational innovative climate. Another hypothesis formulated was that evaluation oriented PA is negatively correlated with the organisational innovative climate. The final hypothesis formulated was that the organisational innovative climate has a mediating effect on the relationship of goal orientated PA on innovative behaviours of staff.

Correlation: The values from the correlation matrix are 0.413, -0.710 and 0.803 respectively.

Ryakhovskaya, A.N., Gruzina, Y.M., Arsenova, E.V., Linder, N.V. & Pukhova, M.M. (2015). Development of methodology for **performance assessment** and the effectiveness of **innovation** activity. *Mediterranean Journal of Social Sciences*, 6(5 S4), 189-196. doi: 10.5901/mjss.2015.v6n5s4p189

**Articles including hypotheses/propositions and correlation**

Hypothesis: Three hypotheses were formulated as part of this study, but none were directly related to the effect of PA on innovation. However, a hypothesis was formulated that the innovation can be broken down into different phases, whose efficacy is measured with appropriate key performance indicators.

Correlation: The correlation value was not provided in the article.

Stern, S.E. (1999). Effects of **technology** on attributions of performance and **employee evaluation**. *Journal of Applied Social Psychology*, 29(4), 786-794. doi: 10.1111/j.1559-1816.1999.tb02024.x

Hypothesis: Two hypotheses were formulated as part of this study, but none were directly related to the effect of PA on innovation.

Correlation: No correlation analysis was performed as part of this study.

Wu, H., Sears, L.E., Coberley, C.R. & Pope, J.E. (2016). Overall well-being and supervisor **ratings of employee performance**, accountability, customer service, **innovation**, prosocial behaviour, and self-development. *Journal of Occupational and Environmental Medicine*, 58(1), 35-40. doi: 10.1097/JOM.0000000000000612

Hypothesis: Two hypotheses were formulated as part of this study, but none were directly related to the effect of PA on innovation.

Correlation: No correlation analysis was performed as part of this study.

Yousefi, R. & Ghajari, S. (2015). A review of human resource marketing and organisational learning on **employee performance** with mediating role of organisational **innovation** (Case study: Refah-Kargaran Bank). *Croizatia*, 92(1), 108-119.

Hypothesis: Twelve hypotheses were formulated as part of this study, but none were directly related to the effect of PA on innovation. However, a hypothesis was formulated that human resource marketing has a substantial influence on worker performance via the organisational innovation moderator. Another hypothesis formulated was that organisational learning has a substantial influence on employee performance via the regulator variable of organisational innovation.

Articles including hypotheses/propositions and correlation
Correlation: No correlation analysis was performed as part of this study.

None of the research papers explicitly satisfied the third inclusion criterion of reporting only on hypotheses which focused primarily on PA and individual innovation from a quantitative perspective. What was found, however, were correlations between development oriented PA and organisational innovative climate ( $R=0.413$ ;  $p<0.01$ ), evaluation oriented PA and organisational innovative climate ( $R=-0.710$ ;  $p<0.01$ ), goal oriented PA and innovative staff behaviour ( $R=0.803$ ;  $p<0.01$ ) as well as the organisation's innovation and performance evaluations ( $R=0.090$ ;  $p<0.01$ ). The direct link between PA and individual innovation is an under-researched topic. This specifies a clear gap in the available body of knowledge.

### 2.1.5.2 Hypotheses for human resource practices and innovation

This section focuses on finding the hypotheses which focus primarily on HRPs and innovation. In Table 4 below, hypotheses posed in articles on HRPs and innovation are presented. Only forty-eight were found that met the criteria for inclusion.

**Table 4: Hypotheses regarding human resource practices and innovation**

Articles including hypotheses/propositions and correlation
Jiang, J., Wang, S. & Zhao, S. (2012). Does <b>HRM</b> facilitate employee <b>creativity</b> and organisational <b>innovation</b> ? A study of Chinese firms. <i>International Journal of Human Resource Management</i> , 23(19), 4025-4047. doi: 10.1080/09585192.2012.690567

### Articles including hypotheses/propositions and correlation

Hypothesis: Seven hypotheses were formulated as part of this study and all were directly related to the influence of HRPs on innovation. Hypothesis one was that intensive selection and extensive search and hiring procedures correlate positively to worker creativity in the organisation. Hypothesis two was that training correlates positively to worker creativity in the organisation. Hypothesis three was that PA with developmental feedback and mistake toleration correlate positively to worker creativity in the organisation. Hypothesis four was that innovation-linked rewards correlate positively to worker creativity in the organisation. Hypothesis five was that job design that offers autonomy, significance, identity, feedback and variety correlates positively to worker creativity in the organisation. Hypothesis six was that teamwork that encourages exchange and cooperation correlates positively to the worker creativity in the organisation. Hypothesis seven was that worker creativity correlates positively to technological and administrative innovation.

Correlations: The correlation for hypothesis one was ( $R=0.28$ ;  $p<0.01$ ), for hypothesis two was ( $R=0.44$ ;  $p<0.01$ ), for hypothesis three was ( $R=0.43$ ;  $p<0.01$ ), for hypothesis four was ( $R=0.45$ ;  $p<0.01$ ), for hypothesis five was ( $R=0.45$ ;  $p<0.01$ ), for hypothesis six was ( $R=0.43$ ;  $p<0.01$ ) and for hypothesis seven was ( $R=0.56$ ;  $p<0.01$  &  $R=0.67$ ;  $p<0.01$ ).

Al-bahussin, S.A. & El-garaihy, W.H. (2013). The impact of **human resource management practices**, organisational culture, **organisational innovation** and knowledge management on organisational performance in large Saudi organisations: Structural equation modelling with conceptual framework. *International Journal of Business and Management*, 8(22), 1-19. doi: 10.5539/ijbm.v8n22p1

Hypothesis: Eight hypotheses were formulated as part of this study but only one was directly related to the influence of human resource management practices on innovation. Hypothesis one was that human resource management practices correlate positively with organisational innovation.

Correlations: The correlation for hypothesis one was ( $R=0.69$ ;  $p<0.01$ ).

**Articles including hypotheses/propositions and correlation**

Camelo-Ordaz, C., Garcia-Cruz, J., Sousa-Ginel, E. & Valle-Cabrera, R. (2011). The influence of **human resource management** on knowledge sharing and **innovation** in Spain: The mediating role of affective commitment. *International Journal of Human Resource Management*, 22(7), 1442-1463. doi: 10.1080/09585192.2011.561960

Hypothesis: Two hypotheses were formulated as part of this study but only one was directly related to the influence of HRPs on innovation. Hypothesis one was that the degree to which knowledge is shared among organisational members correlates positively innovation performance.

Correlations: The correlation for hypothesis one was (R=0.214;  $p < 0.1$ ).

Abbaspour, P. (2015). Effect of strategic orientation and **HRM** strategies on organisational strategic performance: Examining mediating role of strategic learning and **innovation**. *An International Peer-reviewed Journal (Trends in Life Sciences)*, 4(4), 125-132.

Hypothesis: Seven hypotheses were formulated as part of this study but only one was directly related to the influence of human resource management practices on innovation. Hypothesis one was that human resources practices directly influence strategic innovation.

Correlations: The correlation for hypothesis one was (R=0.55;  $p < 0.01$ ).

Li, X., Qin, X., Jiang, K., Zhang, S. & Gao, F. (2015). **Human resource practices** and firm performance in China: The moderating roles of regional human capital quality and firm **innovation** strategy. *Management and Organisation Review*, 11(2), 237-261. doi: 10.1017/mor.2015.12

Hypothesis: Two hypotheses were formulated as part of this study, but none were directly related to the influence of HRPs on innovation.

Correlation: Not applicable in this study.

Matthew, A. (2014). **Human resource management**: The enabler of **innovation** in organisations. *BVIMR Management Edge*, 7(1), 53-59.

### Articles including hypotheses/propositions and correlation

Hypothesis: Three hypotheses were formulated as part of this study but only one was directly related to the influence of HRPs on innovation. Hypothesis one was that HRPs that support the recruitment of creative workers; adventurous behaviour of workers, broad job design, promotion from within, offer constant training for personnel, and various career opportunities for staff and performance-based compensation and group performance correlate positively with company innovation.

Correlations: No correlation analysis was performed as part of this study.

Gil-Marques, M. & Moreno-Luzon, M.D. (2013). Driving **human resources** towards quality and **innovation** in a highly competitive environment. *International Journal of Manpower*, 34(8), 839-860. doi: 10.1108/IJM-07-2013-0183

Hypothesis: Five hypotheses were formulated as part of this study but only two were directly related to the outcome of HRPs on innovation. Hypothesis one was that the use of HRPs within the framework of total quality management correlates positively with incremental innovation. Hypothesis two was that the utilisation of HRPs within the framework of total quality management correlates positively with radical innovation.

Correlations: No correlation analysis was performed as part of this study.

Estrada, I., Martin-Cruz, N. & Perez-Santana, P. (2013). Multi-partner alliance teams for product **innovation**: The role of **human resource management** fit. *Innovation: Management, Policy & Practice*, 15(2), 161-169. doi: 10.5172/impp.2013.15.2.161

Proposition: Three propositions were formulated as part of this study but only one was directly related to the impact of HRPs on innovation. Proposition one was that 'Vertical fit' between each partner's alliance-specific human resource management practices and its alliance objective contributes to generating a strong multi-partner alliance team climate for product innovation.

Correlations: No correlation analysis was performed as part of this study.

Antonioli, D., Mancinelli, S. & Mazzanti, M. (2013). Is environmental **innovation** embedded within high-performance organisational changes? The role of **human resource management** and complementarity in green business strategies. *Research Policy*, 42(4), 975-988. doi: 10.1016/j.respol.2012.12.005



**Articles including hypotheses/propositions and correlation**

Hypothesis: Two hypotheses were formulated as part of this study, but neither was directly related to the outcome of HRPs on innovation.

Correlation: Not applicable in this study.

Soliman, F. (2011). Modelling the role of **human resources management** in the **innovation** chain. *International Employment Relations Review*, 17(2), 1-20.

Proposition: Three propositions were formulated as part of this study but only one was directly related to the influence of HRPs on innovation. Proposition one was that innovative human resource management addresses the three kinds of innovation gaps, i.e., product, process and organisational innovation gaps.

Correlations: No correlation analysis was performed as part of this study.

Dalota, M. & Perju, A. (2010). **Human resources management** and the company's **innovation**. *Romanian Economic and Business Review*, 5(4), 122-131.

Hypothesis: Eight hypotheses were formulated as part of this study but none were directly related to the result of HRPs on innovation.

Correlations: No correlation analysis was performed as part of this study.

De Saa-Perez, P. & Diaz-Diaz, N.L. (2010). **Human resource management** and **innovation** in the Canary Islands: An ultra-peripheral region of the European Union. *The International Journal of Human Resource Management*, 21(10), 1649-1666. doi: 10.1080/09585192.2010.500488

Hypothesis: One hypothesis was formulated as part of this study and it was directly related to the outcome of HRPs on innovation. Hypothesis one was that human resources management policy correlates positively with innovation in organisations in ultra-peripheral areas.

Correlation: Not applicable in this study.

Aktharsha, U.S. & Sengottuvel, A. (2016). Knowledge sharing behaviour and **innovation** capability: **HRM practices** in hospitals. *SCMS Journal of Indian Management*, 13(1), 118-130.

**Articles including hypotheses/propositions and correlation**

Hypothesis: Six hypotheses were formulated as part of this study but only one was directly related to the influence of HRPs on innovation. Hypothesis one was that knowledge sharing behaviour has a significant association with innovation capability.

Correlations: The correlation for hypothesis one was ( $R=0.438$ ;  $p<0.001$ ).

Aryanto, R., Fontana, A. & Afiff, A.Z. (2015). Strategic **human resource management, innovation** capability and performance: An empirical study in Indonesia software industry. *Procedia – Social and Behavioural Sciences*, 211(1), 874-879. doi: 10.1016/j.sbspro.2015.11.115

Hypothesis: Two hypotheses were formulated as part of this study but only one was directly related to the effect of HRPs on innovation. Hypothesis one was that strategic human resource management relates positively to organisational innovation capability.

Correlations: No correlation analysis was performed as part of this study.

Bal, Y., Bozkurt, S. & Ertemsir, E. (2014). A study on determining the relationship between strategic **HRM practices** and creating **innovation** in organisations. *The International Journal of Contemporary Management*, 13(2), 23-36.

Hypothesis: Five hypotheses were formulated as part of this study but only one was directly related to the effect of HRPs on innovation. Hypothesis one was that there is a relationship between strategic human resource management practices (training, participation to decisions, job security, job identification, PA, career management) and creating innovation.

Correlations: The correlations for hypothesis one were: training ( $R=0.556$ ;  $p<0.01$ ), participation to decisions ( $R=0.754$ ;  $p<0.01$ ), job security ( $R=0.485$ ;  $p<0.01$ ), job identification ( $R=0.305$ ;  $p<0.05$ ), PA ( $R=0.499$ ;  $p<0.01$ ) and career management ( $R=0.62$ ;  $p<0.01$ ).

Ceylan, C. (2013). Commitment-based **HR practices**, different types of **innovation** activities and firm **innovation** performance. *International Journal of Human Resource Management*, 24(1), 208-226. doi: 10.1080/09585192.2012.680601

**Articles including hypotheses/propositions and correlation**

Hypothesis: Nine hypotheses were formulated as part of this study but only three were directly related to the effect of HRPs on innovation. Hypothesis one was that a greater utilisation of HRPs correlate to process innovation. Hypothesis two was that a larger application of HRPs correlate to organisational innovation. Hypothesis three was that a significant practise of HRPs correlate to marketing innovation.

Correlations: No correlation analysis was performed as part of this study.

Chang, S., Gong, Y. & Shum C. (2011). Promoting **innovation** in hospitality companies through **human resource management practices**. *International Journal of Hospitality Management*, 30(4), 812-818. doi: 10.1016/j.ijhm.2011.01.001

Hypothesis: Three hypotheses were formulated as part of this study but only two were directly related to the effect of HRPs on innovation. Hypothesis one was that training personnel with several skills relates positively to (A) incremental and (B) radical innovation among organisations. Hypothesis two was that recruiting personnel with many skills relates positively to (A) incremental and (B) radical innovation among firms.

Correlations: The correlations for hypothesis one were: (R=0.42;  $p<0.01$  & R=0.39;  $p<0.01$ ) and hypothesis two were: (R=0.514;  $p<0.01$  & R=0.56;  $p<0.01$ ).

Ling, T.C. & Nasurdin, A.M. (2011). **Human resource management practices** and organisational **innovation**: Assessing the mediating role of knowledge management effectiveness. *Electronic Journal of Knowledge Management*, 9(2), 155-167.

Hypothesis: Six hypotheses were formulated as part of this study but only three were directly related to the effect of HRPs on innovation. Hypothesis one was that the level of human resource management practices (PA, career management, training, rewards, and staffing) correlates positively to product innovation. Hypothesis two was that the level of human resource management practices (PA, career management, training, rewards, and staffing) correlates positively with process innovation. Hypothesis three was that the level of human resource management practices (PA, career management, training, rewards, and staffing) correlates positively to administrative innovation.

### Articles including hypotheses/propositions and correlation

Correlations: The correlations for hypothesis one were: PA ( $R=0.283$ ;  $p<0.01$ ), career management ( $R=0.265$ ;  $p<0.01$ ), training ( $R=0.352$ ;  $p<0.01$ ), reward system ( $R=0.060$ ), recruitment ( $R=0.14$ ;  $p<0.05$ ) and knowledge management effectiveness ( $R=0.417$ ;  $p<0.01$ ), for hypothesis two: PA ( $R=0.264$ ;  $p<0.01$ ), career management ( $R=0.297$ ;  $p<0.01$ ), training ( $R=0.362$ ;  $p<0.01$ ), reward system ( $R=0.24$ ;  $p<0.01$ ), recruitment ( $R=0.112$ ) and knowledge management effectiveness ( $R=0.443$ ;  $p<0.01$ ) and for hypothesis three were: PA ( $R=0.466$ ;  $p<0.01$ ), career management ( $R=0.455$ ;  $p<0.01$ ), training ( $R=0.487$ ;  $p<0.01$ ), reward system ( $R=0.345$ ;  $p<0.01$ ), recruitment ( $R=0.316$ ;  $p<0.01$ ) and knowledge management effectiveness ( $R=0.625$ ;  $p<0.01$ ).

Wu, W.Y. & Lee, F.H. (2013). The influence of commitment-based **HR practices** and knowledge-sharing on employees' **innovation** performance. *African Journal of Business Management*, 7(24), 2381-2393. doi: 10.5897/AJBM2013.6979

Hypothesis: Four hypotheses were formulated as part of this study but only one was directly related to the effect of HRP on innovation. Hypothesis one was that commitment-based human resource practices positively influence innovation performance.

Correlations: No correlation analysis was performed as part of this study.

De Winne, S. & Sels, L. (2010). Interrelationships between human capital, **HRM** and **innovation** in Belgian start-ups aiming at an **innovation** strategy. *International Journal of Human Resource Management*, 21(11), 1863-1883. doi: 10.1080/09585192.2010.505088

Hypothesis: Twelve hypotheses were formulated as part of this study but only two were directly related to the outcome of HRP on innovation. Hypothesis one was that the educational level of staff correlates positively with innovative output. Hypothesis two was that the application of a wide variety of HRP correlates positively with innovative output.

Correlations: The correlation for hypothesis one was ( $R=0.22$ ;  $p<0.05$ ) and for hypothesis two was ( $R=0.28$ ;  $p<0.05$ ).

### Articles including hypotheses/propositions and correlation

Findikli, M.A., Yozgat, U. & Rofcanin, Y. (2015). Management examining organisational **innovation** and knowledge management capacity: The central role of strategic **human resources practices**. *Procedia – Social and Behavioural Sciences*, 181(1), 377-387. doi: 10.1016/j.sbspro.2015.04.900

Hypothesis: Two hypotheses were formulated as part of this study but only one was directly related to the effect of HRPs on innovation. Hypothesis one was that staffing, training, participation, compensation and PA correlate positively with exploitation and exploration innovation.

Correlations: The correlations for hypothesis one were: training and exploration innovation ( $R=0.25$ ;  $p<0.01$ ), staffing and exploration innovation ( $R=0.32$ ;  $p<0.01$ ), participation and exploration innovation ( $R=0.27$ ;  $p<0.01$ ), PA and exploration innovation ( $R=0.27$ ;  $p<0.01$ ), compensation and exploration innovation ( $R=0.5$ ;  $p<0.01$ ), training and exploitation innovation ( $R=0.27$ ;  $p<0.01$ ), staffing and exploitation innovation ( $R=0.42$ ;  $p<0.01$ ), participation and exploitation innovation ( $R=0.38$ ;  $p<0.01$ ), PA and exploitation innovation ( $R=0.38$ ;  $p<0.01$ ), and compensation and exploitation innovation ( $R=0.57$ ;  $p<0.01$ ).

Prieto, I.M. & Pérez-Santana, M.P. (2014). Managing **innovative work behaviour**: The role of **human resource practices**. *Personnel Review*, 43(2), 184-208. doi: 10.1108/PR-11-2012-0199

Hypothesis: Five hypotheses were formulated as part of this study but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this case.

Ling, T.C. & Nasurdin, A.M. (2010). **Human resource management practices** and organisational **innovation**: An empirical study in Malaysia. *Journal of Applied Business Research*, 26(4), 105-116.

### Articles including hypotheses/propositions and correlation

Hypothesis: Three hypotheses were formulated as part of this study and all were directly related to the effect of HRPs on innovation. Hypothesis one was that PA, training, career management, rewards, and recruitment correlate positively with product innovation. Hypothesis two was that PA, career management, recruitment, rewards, and training correlate positively with process innovation. Hypothesis three was that career management, PA, rewards, training and recruitment correlate positively with administrative innovation.

Correlations: No correlation analysis was performed as part of this study.

Lu, K., Zhu, J. & Bao, H. (2015). High-performance **human resource management** and firm performance: The mediating role of **innovation** in China. *Industrial Management & Data Systems*, 115(2), 353-382. doi: 10.1108/IMDS-10-2014-0317

Hypothesis: Four hypotheses were formulated as part of this study but only one was directly related to the effect of HRPs on innovation. Hypothesis one was that training and development, employee participation, job analysis and PA have a positive effect on innovation.

Correlations: The correlations for hypothesis one were: training and production of innovation cogitation ( $R=0.555$ ;  $p<0.01$ ), employee participation and production of innovation cogitation ( $R=0.612$ ;  $p<0.01$ ), job analysis and production of innovation cogitation ( $R=0.476$ ;  $p<0.01$ ), PA and production of innovation cogitation ( $R=0.467$ ;  $p<0.01$ ), employee development and production of innovation cogitation ( $R=0.577$ ;  $p<0.01$ ), training and promotion of innovation cogitation ( $R=0.63$ ;  $p<0.01$ ), employee participation and promotion of innovation cogitation ( $R=0.616$ ;  $p<0.01$ ), job analysis and promotion of innovation cogitation ( $R=0.553$ ;  $p<0.01$ ), PA and promotion of innovation cogitation ( $R=0.511$ ;  $p<0.01$ ), employee development and promotion of innovation cogitation ( $R=0.625$ ;  $p<0.01$ ), training and implementation of innovative behaviour ( $R=0.621$ ;  $p<0.01$ ), employee participation and implementation of innovative behaviour ( $R=0.633$ ;  $p<0.01$ ), job analysis and implementation of innovative behaviour ( $R=0.522$ ;  $p<0.01$ ), PA and implementation of innovative behaviour ( $R=0.465$ ;  $p<0.01$ ), and employee development and implementation of innovative behaviour ( $R=0.671$ ;  $p<0.01$ ).

**Articles including hypotheses/propositions and correlation**

Manafi, M. & Subramaniam, I.D. (2015). Relationship between **human resources management practices**, transformational leadership, and knowledge sharing on **innovation** in Iranian electronic industry. *Asian Social Science*, 11(10), 358-385. doi: 10.5539/ass.v11n10p358

Hypothesis: Thirty one hypotheses were formulated as part of this study but only five were directly related to the effect of HRPs on innovation. Hypothesis one was that training correlates positively with innovation. Hypothesis two was that staffing has a substantially positive influence on innovation. Hypothesis three was that compensation and rewards relate significantly and positively to innovation. Hypothesis four was that PA has a substantially positive influence on innovation. Hypothesis five was that participation correlates positively with innovation.

Correlations: No correlation analysis was performed as part of this study.

Osoian, C. & Petre, A. (2013). **Human resource management practices** and hotel **innovation**. *Studia Universitatis Babeş-Bolyai*, 58(3), 80-89.

Hypothesis: Three hypotheses were formulated as part of this study but only two were directly related to the effect of HRPs on innovation. Hypothesis one was that hiring customer-contact employees with multiple skills has a positive impact on (A) incremental and (B) radical innovation among hotels. Hypothesis two was that training for multiple skills has a positive impact on (A) incremental and (B) radical innovation among hotels.

Correlations: The correlations for hypothesis one were: ( $R=0.78; p<0.05$  &  $R=0.61; p<0.05$ ) and for hypothesis two were: ( $R=0.72; p<0.05$  &  $R=0.63; p<0.05$ ).

Rosli, M.M. & Mahmood, R. (2013). Moderating effects of **human resource management practices** and entrepreneur training on **innovation** and small-medium firm performance. *Journal of Management and Strategy*, 4(2), 60-69. doi: 10.5430/jms.v4n2p60

Hypothesis: Seven hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

**Articles including hypotheses/propositions and correlation**

Stock, R.M., Totzauer, F. & Zacharias, N.A. (2014). A closer look at cross-functional R&D cooperation for **innovativeness: Innovation-oriented leadership and human resource practices** as driving forces. *Journal of Product Innovation Management*, 31(5), 924-938. doi: 10.1111/jpim.12132

Hypothesis: Eight hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

Veenendaal, A. & Bondarouk, T. (2015). Perceptions of **HRM** and their effect on dimensions of **innovative work behaviour**: Evidence from a manufacturing firm. *Management Revue*, 26(2), 138-160. doi: 10.1688/mrev-2015-02-Veenendaal

Hypothesis: Four hypotheses were formulated as part of this study and all were directly related to the effect of HRPs on innovation. Hypothesis one was that workers feeling supportive supervision from their supervisor will display behaviour related to (1a) idea generation, (1b) idea championing, and (1c) idea application. Hypothesis two was that workers who observe that their organisation facilitates training and development will display behaviour related to idea generation. Hypothesis three was that personnel who observe their organisation as sharing information will display behaviour related to (3a) idea generation, (3b) idea championing, and (3c) idea application. Hypothesis four was that workers who perceive their pay to be reasonable will display behaviour related to (4a) idea generation, (4b) idea championing, and (4c) idea application.

Correlations: The correlations for hypothesis one were: (R=0.3;  $p<0.01$ , R=0.34;  $p<0.01$  & R=0.3;  $p<0.01$ ), for hypothesis two were: (R=0.02, R=0.04 & R=0.12;  $p<0.05$ ), for hypothesis three were: (R=0.15;  $p<0.01$ , R=0.14;  $p<0.01$  & R=0.2;  $p<0.01$ ) and for hypothesis four were: (R=-0.12;  $p<0.05$ , R=-0.03 & R=-0.05).

Arvanitis, S., Seliger, F. & Stucki, T. (2016). The relative importance of **human resource management practices for innovation**. *Economics of Innovation and New Technology*, 25(8), 769-800. doi: 10.1080/10438599.2016.1158533



**Articles including hypotheses/propositions and correlation**

Hypothesis: Eight hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

Sarti, D. & Torre, T. (2015). **Human resource management and innovation**: What lessons from Italian social enterprises? *Paper presented at the European Conference on Innovation and Entrepreneurship*, (pp.626-635). San Francisco, USA.

Hypothesis: Three hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

Diaz-Fernandez, M., Bornay-Barrachina, M. & Lopez-Cabrales, A. (2015). **Innovation** and firm performance: The role of **human resource management practices**. *Evidence-based HRM*, 3(1), 64-80. doi: 10.1108/EBHRM-10-2012-0012

Hypothesis: Five hypotheses were formulated as part of this study but only two were directly related to the effect of HRPs on innovation. Hypothesis one was job security correlates positively with innovation. Hypothesis two was that organisational specific training correlates positively with innovation.

Correlations: The correlation for hypothesis one was ( $R=-0.005$ ;  $p<0.1$ ) and for hypothesis two was ( $R=0.349$ ;  $p<0.05$ ).

Kim, D. & Choi, Y. (2014). Social exchange model between **human resource management practices** and **innovation** in software engineering. *Seoul Journal of Business*, 20(2), 49-69.

Hypothesis: Five hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

Tabasi, M.M., Vaezi, R. & Alvani, S.M. (2014). Relationship between strategic **human resource management practices** and organisational **innovation** with respect to the role of organisational learning. *Kuwait Chapter of the Arabian Journal of Business and Management Review*, 3(7), 170-185.

**Articles including hypotheses/propositions and correlation**

Hypothesis: Three hypotheses were formulated as part of this study, but only one was directly related to the effect of HRPs on innovation. Hypothesis one was that there is a significant link between strategic HRPs and organisational innovation.

Correlations: No correlation analysis was performed as part of this study.

Podmetina, D., Volchek, D., Dabrowska, J. & Fiegenbaum, I. (2013). **Human resource practices** and open **innovation**. *International Journal of Innovation Management*, 17(6), 1-22. doi: 10.1142/S1363919613400197

Hypothesis: Four hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

Zhou, Y., Hong, Y. & Liu, J. (2013). Internal commitment or external collaboration? The impact of **human resource management** systems on firm **innovation** and performance. *Human Resource Management*, 52(2), 263-28. doi: 10.1002/hrm.21527

Hypothesis: Five hypotheses were formulated as part of this study, but only two were directly related to the effect of HRPs on innovation. Hypothesis one was that commitment-oriented HRPs will be positively associated with organisational innovation. Hypothesis two was that collaboration-oriented HRPs will be positively associated with organisational innovation.

Correlations: The correlation for hypothesis one was ( $R=0.48$ ;  $p<0.01$ ) and for hypothesis two was ( $R=0.44$ ;  $p<0.01$ ).

Dalota, M. (2013). SMS's **innovation** and **human resources management**. *Romanian Economic and Business Review*, 203-210.

Hypothesis: Eight hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

**Articles including hypotheses/propositions and correlation**

Quiros, I.S. & Ronda, J.G. (2011). The relationship among **innovation** strategy, **human resources practices** and commitment generation in the biotechnology sector. *African Journal of Business Management*, 5(34), 13159-13168. doi: 10.5897/AJBM11.946

Hypothesis: Four hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

Katou, A. (2008). **Innovation** and **human resource management**: The Greek experience. *Organizacija*, 41(3), 81-90. doi: 10.2478/v10051-008-0009-3

Hypothesis: Ten hypotheses were formulated as part of this study, but only two were directly related to the effect of HRPs on innovation. Hypothesis one was that innovation correlates positively with human resource management. Hypothesis two was that human resource policies correlate positively with innovation.

Correlations: No correlation analysis was performed as part of this study.

Mavondo, F.T., Chimhanzi, J. & Stewart, J. (2005). Learning orientation and market orientation: Relationship with **innovation**, **human resource practices** and performance. *European Journal of Marketing*, 39(11/12), 1235-1263. doi: 10.1108/03090560510623244

Hypothesis: Thirty hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

Beugelsdijk, S. (2008). Strategic **human resource management practices** and product **innovation**. *Organisation studies*, 29(6), 821-847. doi: 10.1177/0170840608090530

Hypothesis: Five hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

**Articles including hypotheses/propositions and correlation**

Chen, C. & Huang, J. (2009). Strategic **human resource practices** and **innovation** performance – The mediating role of knowledge management capacity. *Journal of Business Research*, 62(1), 104-114. doi: 10.1016/j.jbusres.2007.11.016

Hypothesis: Four hypotheses were formulated as part of this study, but only one was directly related to the effect of HRPs on innovation. Hypothesis one was that strategic HRPs correlate positively with innovation.

Correlations: No correlation analysis was performed as part of this study.

Jimenez-Jimenez, D. & Sanz-Valle, R. (2005). **Innovation** and **human resource management** fit: An empirical study. *International Journal of Manpower*, 26(4), 364-381. doi: 10.1108/01437720510609555

Hypothesis: Eight hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

Lau, C. & Ngo, H. (2004). The **HR** system, organisational culture, and product **innovation**. *International Business Review*, 13(6), 685-703. doi: 10.1016/j.ibusrev.2004.08.001

Hypothesis: Three hypotheses were formulated as part of this study, but only one was directly related to the effect of HRPs on innovation. Hypothesis one was that HRPs that emphasise training, rewards, and team building, when organised as a human resource system, have positive results on an organisation's innovation.

Correlations: No correlation analysis was performed as part of this study.

Maes, J., Sels, L. & De Winne, S. (2006). **Innovation** as a corporate entrepreneurial outcome in newly established firms: A **human resource-based** view. *SSRN Electronic Journal*, 1(1), 1-29. doi: 10.2139/ssrn.873593

Hypothesis: Five hypotheses were formulated as part of this study, but none were directly related to the influence of HRPs on innovation.

Correlation: Not applicable in this study.

**Articles including hypotheses/propositions and correlation**

Perdomo-Ortiz, J., Gonzalez-Benito, J. & Galende, J. (2009). An analysis of the relationship between total quality management-based human resource management practices and innovation. *International Journal of Human Resource Management*, 20(5), 1191-1218. doi: 10.1080/09585190902850372

Hypothesis: Three hypotheses were formulated as part of this study, but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

Searle, R.H. & Ball, K.S. (2003). Supporting **innovation** through **HR policy**: Evidence from the UK. *Creativity and Innovation Management*, 12(1), 50-62.

Proposition: Four propositions were formulated as part of this study but none were directly related to the effect of HRPs on innovation.

Correlation: Not applicable in this study.

Walsworth, S. & Verma, A. (2007). Globalisation, **human resource practices** and **innovation**: Recent evidence from the Canadian workplace and employee survey. *Industrial Relations*, 46(2), 222-240.

Hypothesis: Two hypotheses were formulated as part of this study, but none were directly related to the influence of HRPs on innovation.

Correlation: Not applicable in this study.

Thirteen of the research papers explicitly satisfied the third inclusion criterion of reporting only on hypotheses which focused primarily on HRPs and innovation from a quantitative perspective. The HRP most often identified as an antecedent to innovation was training and development (18 references – including concepts such as training and employee development), with correlations varying from 0.720 to 0.250. Apart from training and development, the next most common HRP found was PA which was identified in ten occasions. Here the correlations varied from 0.511 to 0.264. Also, in ten of the cases, staffing (including concepts such as hiring, recruitment and selection) was presented as an antecedent to innovation. The correlations varied from 0.780 to

0.112. In seven cases employee involvement (including concepts such as participation, employee participation and teamwork) was presented as an antecedent to innovation with correlations varying from 0.754 to 0.270. Furthermore, in six instances compensation and rewards (including concepts such as incentive rewards, reward systems and compensation) were presented as an antecedent to innovation. Here the correlations varied from 0.570 to 0.060. Finally, in five cases communication and information sharing (including concepts such as knowledge sharing and knowledge management), and job design (including concepts such as job analysis and job identification) were presented as antecedents to innovation with correlations varying from 0.625 to 0.214 and from 0.553 to 0.305 respectively. From the literature, it is apparent that the most commonly studied HRP as an antecedent to innovation is training and development, and then PA, and staffing followed by the other HRPs. Also evident from the literature is that the size of the PA correlations are lower than the correlations related to the other HRPs. Despite the volume of literature, the PA-innovation link focuses mostly on Western samples. Empirical studies on the PA-innovation relationship is seemingly lacking, more so within the South African context. Furthermore, mediators and moderators appeared to be lacking when performing this critical analysis and it seems that there has, to date, been a lack of complexity in investigating the PA-innovation link. This suggests a clear deficiency in the current body of knowledge.

### **2.1.6 Paradigms**

Carter, Lubinsky and Domholdt (2013) indicate that a paradigm is defined by the beliefs and assumptions that direct scholars. None of the research papers describe the paradigm that was adopted in carrying out the study. It can, however, be assumed that the paradigm that best fits the thirteen studies is the positivism approach of epistemology.

### **2.1.7 Performance appraisal, human resource practices and innovation literature**

All three of the literature research objectives are intended to expose a deficiency in the literature related to the PA-innovation link. The first literature review objective was to critically review the present body of knowledge about the link between PA and innovation. Research objective two was to report on the magnitude of the effect of PA on innovation based on a review of the literature. The third and final literature research objective was to report on the relative magnitude of the effect of PA, given other HRPs, on innovation based on an analysis of the literature.

Three criteria were delineated for selection of only relevant scholarly work for this study. The first inclusion criterion was only to include research papers which reported on words representative of PA, as well as innovation, in their titles for research objective two and then words representative of HRPs, as well as innovation, in their titles for research objective three. Presented in Table 1 above are thirty-four research papers that satisfied the first inclusion criterion of research papers on PA and innovation. Furthermore, Table 2 lists the sixty research papers that met the first inclusion criterion of research papers on HRPs and innovation.

Presented in Table 3 above are eleven research papers that satisfied the second inclusion criterion of hypotheses and propositions (where applicable) posed in research papers on PA and innovation. Also, forty-eight research papers presented in Table 4 satisfied the second inclusion criterion of hypotheses and propositions (where applicable) posed in research papers on HRPs and innovation.

The third inclusion criterion was to report only hypotheses or propositions that focus primarily on PA and innovation, as well as HRPs and innovation, with the corresponding correlation values (where available). None of the research papers explicitly studied the relationship between PA and innovation from a quantitative perspective. Conclusive evidence of the importance of PA is not available, nor is evidence of which elements of PAs are essential in relation to innovation. This indicates a clear gap in the current literature. Thirteen of the research papers explicitly studied the relationship between HRPs and innovation from a quantitative perspective. Conclusive evidence of the importance of HRPs in relation to innovation is available. However, limited research is available on the relationship between the individual HRPs and individual innovation. This indicates a further gap in the current literature.

## **2.2 Literature specific to each of the empirical research objectives**

The literature presented in the first chapter of this thesis, and above, is relevant to all the empirical research objectives. However, there is some literature that is applicable only to specific research objectives. These are presented, per objective, below.

### **2.2.1 Literature specific to research objective four: Performance appraisal and innovation**

To recap, the fourth research objective was to empirically investigate the magnitude of the effect of PA, and its individual items, relative to other organisational variables, on innovation, across employees (in general).

Ayers (2013), DeNisi and Pritchard (2006), Esu and Inyang (2009), and Rubin (2011) argue that successful organisations exploit HRPs (such as PA) as management tools to improve performance and effectiveness. PA is one of the most vital components of human resource management practice (Boswell, & Boudreau, 2000; Judge, & Ferris, 1993) and contributes to continuous improvement in the present business environment (Ahmed, Mohammad, & Islam, 2013).

PAs are regularly discussed in the literature and applied in practice. Globally, almost all organisations make use of some sort of PA system (DeNisi, & Pritchard, 2006; Mitchell, 2010; Nankervis, & Compton, 2006). Therefore human resource researchers and practitioners alike have devoted close to a century to PA research (DeNisi, & Pritchard, 2006; Siaguru, 2011).

PAs are utilised for a multitude of purposes - such as decision making with regard to compensation, promotions, retention and developmental needs and, if conducted effectively, can significantly contribute to employee motivation and satisfaction (DeNisi, & Pritchard, 2006; Espinilla, de Andrés, Martínez, & Martínez, 2013; Grobler, Wörnich, Carrell, Elbert, & Hatfield, 2011). PA systems incorporate all those facets of human resource management that are intended to advance the effectiveness and efficiency of both the organisation and the employee (Khoury, & Analoui, 2004). Furthermore, Khan (2013) argues that PA is a chief component of the performance management process which links company goals and daily performance achievements, as well as individual development and rewards. Grobler, Wörnich, Carrell, Elbert and Hatfield (2011) indicate that PAs are key to the improvement of an organisation's human capital.

The link between PA and innovation has been empirically established according to studies conducted by researchers Jimenez-Jimenez and Sanz-Valle (2005), and Mark and Akhtar (2003), who suggest that PA is an important HRP responsible for innovation. Bal, Bozkurt and Ertemsir (2014), Jimenez-Jimenez and Sanz-Valle (2005) and Shipton, West, Dawson, Birdi and Patterson (2006) establish that there is a strong and positive link between PA and innovation.



Specifically, Shipton, West, Dawson, Birdi and Patterson (2006) argue that PAs that are focused predominantly on employee development foster innovation. Chen and Huang (2009) indicate that organisations with highly effective PA systems achieve superior innovation results.

It is interesting to note that the effect of PA on innovation may be indirect. Ling and Nasurdin (2011), for example, suggest that workers achieve better results in innovative undertakings as PAs increase worker satisfaction and commitment. In the study by Ling and Nasurdin (2011), it was also demonstrated that PAs are positively correlated to knowledge management effectiveness. These researchers found that knowledge management effectiveness completely mediates the link between PA and innovation (Ling, & Nasurdin, 2011). In the study conducted by Runfeng (2011), the author found that organisational innovative climate has a mediating effect on the relationship of PA on innovative behaviours. This supports the notion that PAs have indirect effects on innovation.

In studying the literature on innovation, it is interesting to note that Sethibe and Steyn (2015) indicate that many of the researchers focused almost exclusively on TL when studying the relationship between leadership and innovation. Furthermore, TL is positively and significantly related to innovation according to Al-Husseini and Elbeltagi (2012), Hu, Gu and Chen (2012), Khan, Aslam and Riaz (2012), Paulsen, Callan, Ayoko and Saunders (2013), Sethibe and Steyn (2016), and Tipu, Ryan and Fantazy (2012). In the study by Sethibe and Steyn (2016), however, the investigators found no direct connection between transactional leadership and innovation.

Another important antecedent to innovation is organisational climate (Michaelis, Stegmaier, & Sonntag, 2010; Nusair, 2013; Panuwatwanich, Stewart, & Mohamed, 2008; Shanker, Bhunugopan, & Fish, 2012). According to Björkdahl and Börjesson (2011), Lin and Liu (2012), Michaelis, Stegmaier and Sonntag (2010), Shanker, Bhunugopan and Fish (2012), and Zhang and Begley (2011), there is an important association between climate and innovation.

On the other hand, PP is significantly and positively related to innovative behaviour (Seibert, Kraimer, & Crant, 2001; Tai, & Mai, 2016; Zhang, Li, & Yu, 2014). Fuller and Marler (2009), Parker, Williams and Turner (2006), Seibert, Kraimer and Crant (2001), and Thomas, Whitman and Viswesvaran (2010), posit that PP is the primary determinant of innovative behaviours.

It is thus apparent from the literature that TL, organisational climate and PP are significant predictors of innovation and it is noted that it would be interesting to study the relative importance of PA, given these other antecedents to innovation.

### **2.2.2 Literature specific to research objective five: Performance appraisal and innovation within organisations**

To recap, the fifth research objective was to empirically investigate the magnitude of the effect of PA, and its individual items, relative to other organisational variables, on innovation, within (specific) organisations.

Researchers and practitioners regularly disagree about the PA literature. However, what is evident, is that there is an abundance of interest in PA on the part of both practitioners and researchers. Research suggests that, in some organisations, PA is employed to reduce inefficiency and increase performance, resulting in superior organisational results (Ayers, 2013; DeNisi, & Pritchard, 2006; Esu, & Inyang, 2009; Rubin, 2011). According to the article by Ahmed, Mohammad and Islam (2013), in the current economic climate, PA plays a critical role with regard to progressive improvement in organisations. On the other hand, Boswell and Boudreau (2000), Downs (1990), Judge and Ferris (1993), as well as Walsh (2003), suggest that PA is one of the most important HRPs utilised in organisations. Virtually all organisations worldwide utilise some sort of PA system (DeNisi, & Pritchard, 2006; Grote, 1996; Kirner, 2006; Longenecker, & Goff, 1992; Mitchell, 2010; Nankervis, & Compton, 2006) and, for this reason, human resource professionals and researchers alike have devoted close to a century to PA research (DeNisi, & Pritchard, 2006; Siaguru, 2011).

Considering the particular uses of PA, numerous studies (Blankenship, 2002; DeNisi, & Pritchard, 2006; Espinilla, de Andrés, Martínez, & Martínez, 2013; Grobler, Wörnich, Carrell, Elbert, & Hatfield, 2011; Kirner, 2006; Swiercz, Bryan, Eagle, Bizzotto, & Renn, 2012) suggest that PAs are employed for a variety of reasons such as decision making with regard to compensation, as well as promotions, retention and developmental needs and that, if conducted effectively, they can significantly contribute to employee motivation and satisfaction. Kirner (2006) indicates that, initially, PA had only one purpose – that of evaluating merit – but that, over the decades it has evolved to include a multitude of uses, namely enhancement of both

employee and business results and efficacy, coaching and improvement, pay and staffing decisions, and legal documentation. PAs are crucial to employee development (Grobler, Wörnich, Carrell, Elbert, & Hatfield, 2011; Venclova, Salkova, & Kolackova, 2013). Kondrasuk (2011), for example, suggests that PA enables an organisation to be more efficient and also keeps the workforce motivated. PAs integrate the features of human resource management that are intended to advance the effectiveness and efficiency of both the organisation and the employee (Khoury, & Analoui, 2004; Kirner, 2006; Longenecker, & Goff, 1992). Furthermore, Khan (2013) and Kirner (2006) argue that the PA system is a significant part of the performance management process which links company goals and daily performance achievements, as well as individual development and rewards.

Research by Jimenez-Jimenez and Sanz-Valle (2005), and Mark and Akhtar (2003), empirically investigated and established a relationship between PA and innovation. These researchers also acknowledge that PA is an important HRP responsible for innovation (Jimenez-Jimenez, & Sanz-Valle, 2005; Mark, & Akhtar, 2003). Several studies (Bal, Bozkurt, & Ertemsir, 2014; Jimenez-Jimenez, & Sanz-Valle, 2005; Shipton, West, Dawson, Birdi, & Patterson, 2006) theorise that the PA-innovation relationship is positive and significant. The article by Chen and Huang (2009) supports the position that organisations with extremely effective PA systems attain greater innovation outcomes. On the other hand, PA that is dedicated mainly to employee development supports innovation (Shipton, West, Dawson, Birdi, & Patterson, 2006).

It is, however, not clear whether PA is an effective driver of innovation in all organisations. The universalistic, contingency, and configurational perspectives are the three major approaches to understanding human resource management (Delery, & Doty, 1996; Hamid, 2013; Katou, & Budhwar, 2007; Nigam, Nongmaithem, Sharma, & Tripathi, 2011) and they may be utilised to clarify the connection between PA and innovation, given the context of specific organisations. These perspectives are presented below:

- The universalistic perspective posits that some HRPs are generally superior to others in all organisations under any conditions (Delery, & Doty, 1996; Jeong, & Choi, 2016; Katou, 2008; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009). This implies that organisations that adopt these best practices achieve superior results (Delery, & Doty, 1996; Jeong, & Choi, 2016;

Katou, 2008; Steyn, 2012) and that strategy and human resource policies are as free as each other in influencing organisational performance (Claus, 2003; Huselid, 1995; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009; Pfeffer, 1994).

- The contingency perspective theorises that the choice of a certain set of human resource policies or practices is reliant on strategy (Katou, 2008; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009). Gomez-Mejia and Balkin (1992), Katou and Budhwar (2007), Schuler and Jackson (1987), and Youndt, Snell, Dean and Lepak (1996) suggest that there needs to be a fit between organisational strategy and human resource strategy to influence organisational performance. The utilisation of HRPs within an organisation could encourage employees to generate innovative ideas that promote innovation (Dalota, & Perju, 2010). In a study by Katou (2008), the researcher proposes that a contingency perspective may mean that an innovation strategy determines human resource policies – or that human resource policy determines an innovation strategy for an organisation. Meanwhile, Dalota and Perju (2010) argue that the choice of innovation strategy is dependent on PA, rewards, career opportunities, and employee participation. PA, recruitment and incentives constitute a bundle of HRPs for organisations following an innovation strategy (Dalota, & Perju, 2010; Jimenez-Jimenez, & Sanz-Valle, 2005).
- The configurational perspective, according to Jeong and Choi (2016) and Lengnick-Hall, Lengnick-Hall, Andrade and Drake (2009), theorises that groupings of certain HRPs, rather than individual HRPs, increase organisational performance as some practices reinforce one another. This implies that there are particular combinations of HRPs that are the most suitable for improving organisational performance. Delery and Doty (1996) indicate that, for the configurational perspective, there should be both internal consistency of HRPs (horizontal fit) and congruence of human resource systems and other organisational features (vertical fit).

Considering the theoretical perspectives, evidence of the PA-innovation relationship being universalistic would require that PA uniformly correlates with innovation in all organisations. Should the relationship be a good fit for the configurational perspective, it might be expected that the results will show specific patterns in the way in which PA correlates with innovation across organisations. Unfortunately, signs of the contingency perspective would require data on the

strategic positions of the different organisations to have been collected, but this was not done. This perspective could, therefore, not be explored.

It is important to note that many other variables are associated with innovation, such as leadership styles, organisational climate, and personal attributes. When studying the relationship between leadership and innovation, researchers have concentrated mostly on TL rather than on transactional leadership (Sethibe, & Steyn, 2015). According to Al-Husseini and Elbeltagi (2012), Hu, Gu and Chen (2012), Khan, Aslam and Riaz (2012), Paulsen, Callan, Ayoko and Saunders (2013), Sethibe and Steyn (2016), and Tipu, Ryan and Fantazy (2012), TL is significantly and positively related to innovation. Conversely, Sethibe and Steyn (2016) found no direct link between transactional leadership and innovation.

Organisational climate also seems to be influential in fostering innovation. Michaelis, Stegmaier and Sonntag (2010), Nusair (2013), Panuwatwanich, Stewart and Mohamed (2008), and Shanker, Bhunugopan and Fish (2012) claim that organisational climate is a key antecedent to innovation. Research by, Björkdahl and Börjesson (2011), Lin and Liu (2012), Michaelis, Stegmaier and Sonntag (2010), Shanker, Bhunugopan and Fish (2012), and Zhang and Begley (2011), has shown that there is a significant correlation between organisational climate and innovation.

At an individual level, personal attributes also coincide with innovation in organisations. It is interesting to note that PP positively and significantly correlates to innovative behaviour (Seibert, Kraimer, & Crant, 2001; Tai, & Mai, 2016; Zhang, Li, & Yu, 2014). Indeed, many scholars posit that PP is the chief determinant of innovative behaviour (Fuller, & Marler, 2009; Parker, Williams, & Turner, 2006; Seibert, Kraimer, & Crant, 2001; Thomas, Whitman, & Viswesvaran, 2010).

It is evident from the literature that TL, organisational climate and PP are significant predictors of innovation. It would, therefore, in the study of PA, be interesting to consider the relative importance of PA given these other antecedents to innovation.

### **2.2.3 Literature specific to research objective six: Performance appraisal, as part of human resource practices, and innovation**

To recap, the sixth research objective was to empirically investigate the relative magnitude of the effect of PA, given other HRPs, on innovation, across employees (in general).

There is widespread interest in human resources, and practitioners and researchers often debate the available HRP literature. According to Al-Bahussin and El-Garaihy (2013), human resources is important to organisations. Momemi, Marjani and Saadat (2012) posit that human resource practitioners have started to recognise the importance of HRPs. Ceylan (2013), Cooke and Saini (2010) and Hayton (2005) indicate that research by human resource practitioners and researchers on HRPs and innovation has increased considerably over the past few decades. Similarly, according to Burma (2014), Delery and Gupta (2016) and Hayton (2005), studies on HRPs by human resource practitioners and researchers have radically increased in the last two decades. The number of journals dedicated to human resource management has also increased considerably in the past few years, both in South Africa and internationally.

Effective human resources have positive effects in general. Most successful organisations exploit HRPs, as management tools to improve effectiveness and performance (Ayers, 2013; DeNisi, & Pritchard, 2006; Esu, & Inyang, 2009; Hashim, Ali, & Fawzi, 2005; Melton, & Meier, 2017; Rubin, 2011). HRPs contribute to continuous improvement and success (Ahmed, Mohammad, & Islam, 2013; Hayton, 2005) and, in addition, HRPs are employed in organisations to serve many purposes. Collins and Clark (2003), Delery and Doty (1996), Delery and Gupta (2016), Kehoe and Wright (2013), Martinsons (1995) and Melton and Meier (2017) argue that HRPs are important in trying to achieve organisational goals.

Human resources consist of many practices. Edralin (2010) suggests that HRPs include designing and analysing work, PA, recruiting, compensation, selecting, human resource planning, training and development, and employee relations. Cascio (2010), meanwhile, suggests that staffing, information sharing, PA, job design, incentive and promotion schemes, attitude assessment, complaint processes, and workforce management participation are the best HRPs for 21<sup>st</sup> century firms. Also, Madmoli (2016) argues that selection, training, job evaluation, rewarding, employee participation, and recruiting, as well as knowledge or information sharing, are effective HRPs. As a final example, Sun, Aryee and Law (2007) indicate that job security, training, promotion, appraisal, and career paths are high performance HRPs.

Several articles (Al-Bahussin, & El-Garaihy, 2013; Al-Ghamdi, Abdel-Razek, & Abdel-Razek, 2015; Aryanto, Fontana, & Afiff, 2015; Dalota, & Perju, 2010; Gil-Marques, & Moreno-

Luzon, 2013; Katou, 2008; Le Bas, & Lauzikas, 2009; Matthew, 2014; Shipton, West, Dawson, Birdi, & Patterson, 2006) have empirically established the relationship between HRPs and innovation. In addition, based on human resource management literature by Noe, Hollenbeck, Gerhart and Wright (2008) which describes that HRPs have been recognised to improve organisational performance by contributing to innovation, satisfaction, and productivity. Laursen and Foss (2003), for example, found that seven out of the nine HRPs lead to innovation. Dalota (2013), Looise and Van Riemsdijk (2004) and Walsworth and Verma (2007) indicate that HRPs contribute to innovation while Hashim, Ali and Fawzi (2005), Jimenez-Jimenez and Sanz-Valle (2005), Ling and Nasurdin (2011), Looise and Van Riemsdijk (2004) and Matthew (2014) suggest that HRPs have a significant impact on innovation. Furthermore, Dalota and Perju (2010) theorise that motivating employees to generate innovative ideas that promote innovation can be achieved by utilising HRPs within an organisation.

#### **2.2.4 Literature specific to research objective seven: Performance appraisal, as part of human resource practices, and innovation within organisation**

To recap, the seventh research objective was to empirically investigate the relative magnitude of the effect of PA, given other HRPs, on innovation, within (specific) organisations.

There is widespread interest in human resources, and practitioners and researchers often debate the available HRP literature. According to Al-Bahussin and El-Garaihy (2013), human resources is important to organisations. Momemi, Marjani and Saadat (2012) posit that human resource practitioners have started to recognise the importance of HRPs. Ceylan (2013), Cooke and Saini (2010) and Hayton (2005) indicate that research by human resource practitioners and researchers on HRPs and innovation has increased considerably over the past few decades. Similarly, according to Burma (2014), Delery and Gupta (2016) and Hayton (2005), studies on HRPs by human resource practitioners and researchers have increased dramatically in the last two decades. The number of journals dedicated to human resource management has also increased considerably in the past few years, both in South Africa and internationally.

Effective human resources have positive effects in general. Most successful organisations exploit HRPs, as management tools to improve effectiveness and performance (Ayers, 2013; DeNisi, & Pritchard, 2006; Esu, & Inyang, 2009; Hashim, Ali, & Fawzi, 2005; Melton, & Meier, 2017;

Rubin, 2011). HRPs contribute to continuous improvement and success (Ahmed, Mohammad, & Islam, 2013; Hayton, 2005) and, in addition, HRPs are employed in organisations to serve many purposes. Collins and Clark (2003), Delery and Doty (1996), Delery and Gupta (2016), Kehoe and Wright (2013), Martinsons (1995) and Melton and Meier (2017) argue that HRPs are important in trying to achieve organisational goals.

Human resources consist of many practices. Edralin (2010) suggests that HRPs include designing and analysing work, PA, recruiting, compensation, selecting, human resource planning, training and development, and employee relations. Cascio (2010), meanwhile, suggests that staffing, job design, information sharing, PA, promotion systems, attitude assessment, incentive systems, complaint procedures, and labour management participation are the best HRPs for 21<sup>st</sup> century firms. Also, Madmoli (2016) argues that selection, training, job evaluation, rewarding, employee participation, and recruiting, as well as knowledge or information sharing, are effective HRPs. As a final example, Sun, Aryee and Law (2007) indicate that job security, training, promotion, appraisal, and career paths are high performance HRPs.

Several articles (Al-Bahussin, & El-Garaihy, 2013; Al-Ghamdi, Abdel-Razek, & Abdel-Razek, 2015; Aryanto, Fontana, & Afiff, 2015; Dalota, & Perju, 2010; Gil-Marques, & Moreno-Luzon, 2013; Katou, 2008; Le Bas, & Lauzikas, 2009; Matthew, 2014; Shipton, West, Dawson, Birdi, & Patterson, 2006) have empirically established the relationship between HRPs and innovation. In addition, based on human resource management literature by Noe, Hollenbeck, Gerhart and Wright (2008) which describes that HRPs have been recognised to improve organisational performance by contributing to innovation, satisfaction, and productivity. Laursen and Foss (2003), for example, found that seven out of the nine HRPs lead to innovation. Dalota (2013), Looise and Van Riemsdijk (2004) and Walsworth and Verma (2007) indicate that HRPs contribute to innovation while Hashim, Ali and Fawzi (2005), Jimenez-Jimenez and Sanz-Valle (2005), Ling and Nasurdin (2011), Looise and Van Riemsdijk (2004) and Matthew (2014) suggest that HRPs have a major impact on innovation. Furthermore, Dalota and Perju (2010) theorise that motivating employees to generate innovative ideas that promote innovation can be achieved by utilising HRPs within an organisation.



Theoretically, the focus on certain practices could be explained. Organisations routinely utilise a combination of HRPs, or individual HRPs, to either directly or indirectly gain competitive advantage (Delery, & Doty, 1996; Delery, & Gupta, 2016; Edralin, 2010; Hashim, Ali, & Fawzi, 2005; Ling, & Nasurdin, 2011). As stated above, however, no consensus on the particular practices which drive innovation are available, particularly within the South African context. It is, however, not clear whether HRPs are an effective driver of innovation in all organisations. The three major approaches to understanding human resource management, i.e., the universalistic, contingency, and configurational perspectives (Delery, & Doty, 1996; Hamid, 2013; Katou, & Budhwar, 2007; Nigam, Nongmaithem, Sharma, & Tripathi, 2011), are also applicable with regard to objective seven. This was, however, covered in the discussion of the literature about objective five, and was thus not repeated here.

Considering the three theoretical perspectives, all HRPs uniformly correlating with innovation in all 53 organisations would provide proof of the HRPs-innovation link being universalistic. Should the relationship be a good fit for the configurational perspective, it might be expected that the results would show specific patterns in the way in which HRPs correlate with innovation across organisations. Unfortunately, confirmation of a contingency perspective would require data on the strategic positions of the different organisations to have been gathered, but this was not done. The contingency perspective could, therefore, not be investigated.

#### **2.2.5 Literature specific to research objective eight: Performance appraisal-innovation model with mediator and moderator variables**

To recap, the eighth research objective was to empirically test different models on the PA-innovation link, applying mediators such as WE and AC, and moderators such as PP, TL, and CE.

Most successful organisations employ PA among other HRPs to enhance organisational performance and employee efficiency (Ayers, 2013; DeNisi, & Pritchard, 2006), Esu, & Inyang, 2009; Rubin, 2011). According to Ahmed, Mohammad and Islam (2013), PA is responsible for continuous improvement within the organisational setting. The literature reflects that PA is an important HRP. For example, Boswell and Boudreau (2000), and Judge and Ferris (1993) indicate that PA is one of the main sub-practices of the nine common HRPs.

Muller, Bezuidenhout, and Jooste (2011) indicate that PA is a method of witnessing and assessing an employee's performance, formally noting the evaluation, and providing feedback on key performance areas of improvement. While, the comprehensive definition developed above indicates that PA refers to an officially organised means that managers use annually to gauge a subordinate's actual performance, as well as strengths and weaknesses, to develop and reward the employee. PA is a commonly explored topic in human resource management. In addition, DeNisi and Pritchard (2006), as well as Siaguru (2011), indicate that almost a century has been devoted to the study of PA by human resource practitioners and researchers. Just about all organisations make use of some sort of PA system (DeNisi, & Pritchard, 2006; Mitchell, 2010; Nankervis, & Compton, 2006).

Given the aforementioned, it is clear that PA and innovation both play a significant role within the organisational context. It is important to note that organisations with extremely effective PA methods attain substantial innovation results (Chen, & Huang, 2009). Furthermore, numerous studies indicate that there is a significant and positive relationship between PA and innovation (Aktharsha, & Sengottuvel, 2016; Bal, Bozkurt, & Ertemsir, 2014; Choi, Moon, & Ko, 2013; Dalota, & Perju, 2010; Jimenez-Jimenez, & Sanz-Valle, 2005; Ling, & Nasurdin, 2011; Mark, & Akhtar, 2003; Runfeng, 2011; Shipton, West, Dawson, Birdi, & Patterson, 2006). The aforementioned suggests that PA results in innovation.

There is an abundance of antecedents to innovation, for example, leadership styles, organisational climate, PP, commitment, and engagement. Firstly, considering the link between leadership and innovation, Sethibe and Steyn (2015), for example, note that the majority of the studies fixated on TL rather than on other leadership styles. According to Burns (1978), TL is a collaboration between leaders and subordinates in an effort to elevate each other's principles and motivation levels. A transformational leader is someone who influences subordinates to achieve more than is anticipated (Bass, 1985). Transformational leaders inspire followers to accomplish organisational goals, stress the need for organisational change, and promote innovation (Alsalamy, Behery, & Abdullah, 2014). Also, TL has a strong and positive relationship with innovation (Al-Husseini, & Elbeltagi, 2012; Hu, Gu, & Chen, 2012; Khan, Aslam, & Riaz, 2012; Mumford, Scott, Gaddis, & Strange, 2002; Oke, Munshi, & Walumbwa, 2009; Paulsen, Callan, Ayoko, & Saunders, 2013; Sethibe, & Steyn, 2016; Tipu, Ryan, & Fantasy, 2012). In research conducted by Sethibe and

Steyn (2016), for example, no direct or indirect link was established between transactional leadership and innovation. This notion is reinforced by the work led by Oke, Munshi and Walumbwa (2009) who conclude that TL is far more suitable than transactional leadership in fostering innovation.

The second variable of interest is the CE climate. CE climate is a major topic of interest for researchers (Dess, Ireland, Zahra, Floyd, Janney, & Lane, 2003; Phan, Wright, Ucbasaran, & Tan, 2009). Hornsby, Kuratko, and Zahra (2002) define CE very broadly as the development and implementation of fresh ideas within an organisation, while, McFadzean, O'Loughlin, and Shaw (2005) define CE as an effort to promote innovation within the organisation. CE is centred on five factors, namely, work discretion, management support, time available, rewards, and organisation boundaries (Hornsby, Kuratko, & Zahra, 2002; Ireland, Kuratko, & Morris, 2006; Morris, Kuratko, & Covin, 2010). It appears that organisational climate may also be prominent in promoting innovation. Organisational climate is an essential antecedent to innovation (Michaelis, Stegmaier, & Sonntag, 2010; Nusair, 2013; Panuwatwanich, Stewart, & Mohamed, 2008; Shanker, Bhunugopan, & Fish, 2012). Several empirical studies provide evidence that there is a strong connection between innovation and climate (Björkdahl, & Börjesson, 2011; Lin, & Liu, 2012; Michaelis, Stegmaier, & Sonntag, 2010; Shanker, Bhunugopan, & Fish, 2012; Zhang, & Begley, 2011).

It is stated by many that the PP of employees also contributes to innovation in organisations. Bateman and Crant (1993) suggest that PP is a character trait embodying proactive behaviour. Furthermore, PP is seen as a key characteristic of employees in successful organisations. It is not surprising, then, that employees with a PP are expected to seek out new opportunities to enhance their work performance and implement new ideas (Kim, Hon, & Lee, 2010). A handful of studies (Seibert, Kraimer, & Crant, 2001; Tai, & Mai, 2016; Trost, Skerlavaj, & Anzengruber, 2016; Zhang, Li, & Yu, 2014) show that PP has a positive and strong connection with innovative behaviour. Considering the foundation for innovation, numerous studies (Fuller, & Marler, 2009; Parker, Williams, & Turner, 2006; Seibert, Kraimer, & Crant, 2001; Thomas, Whitman, & Viswesvaran, 2010) theorise that PP is the basis of innovative behaviour.

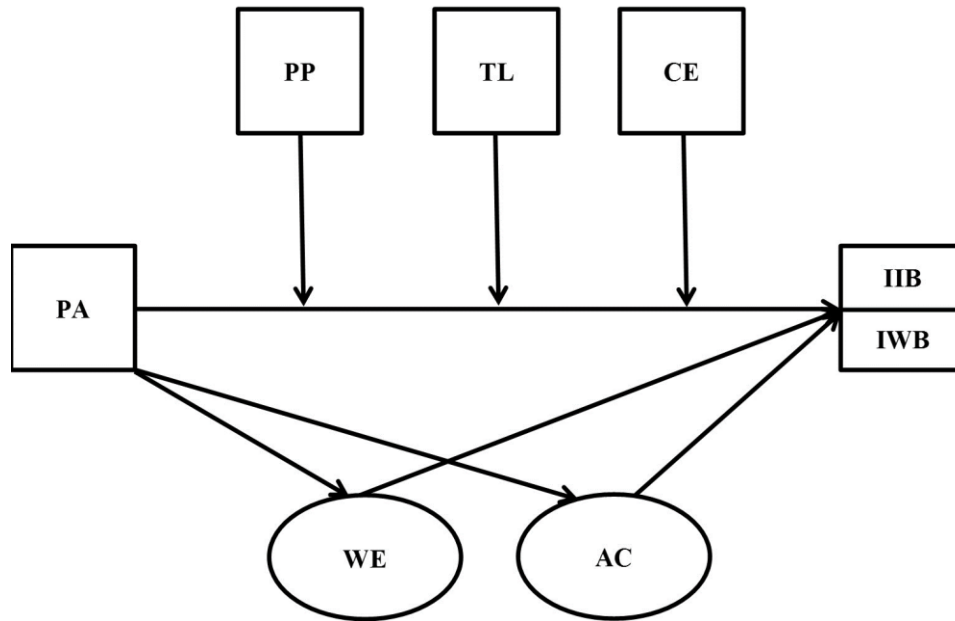
Organisational commitment may also influence innovation. Organisational commitment is regarded as a psychological state from a multi-dimensional perspective, which consists of three distinct kinds of commitment, i.e., affective, normative and continuance commitment (Allen, & Meyer, 1990; Meyer, & Allen, 1997). AC is regarded as an employee's "emotional attachment to, identification with, and involvement in the organisation" (Meyer, & Allen, 1997: 67). The focus of this research was on AC, as it is often this element of organisational commitment that is presented as the central element (Lamba, & Choudhary, 2013; Steyn, Bezuidenhout, & Grobler, 2017). AC is regarded as an emotional attachment employees feel toward the organisation and their jobs, and the desire to stay loyal (Mei, Ong, & Pei, 2017; Meyer, & Allen, 1997). In a study by Jafri (2010), AC is positively related to innovative behaviour while continuance commitment is negatively related to innovative behaviour.

The last variable of concern in this study is WE. Many scholars have offered a definition for WE over the years, but Schaufeli, Salanova, González-Romá, and Bakker (2002) provide the most accepted definition. Engagement may be defined as a "positive, fulfilling, work-related state of mind that is characterised by vigour, dedication, and absorption" (Schaufeli, Salanova, González-Romá, & Bakker 2002: 74). According to Agarwal (2014), and Agarwal, Datta, Blake-Beard, and Bhargava (2012), WE relates positively to innovative work behaviour (IWB). These authors also provide evidence that WE mediates the connection between leader-member exchange and IWB, and partially mediates intention to quit (Agarwal, Datta, Blake-Beard, & Bhargava, 2012).

TL, CE climate, PP, AC and WE are important contributors to innovation which is quite apparent from the literature mentioned above. Theoretically, considering general systems theory as well as the input-transformation-output model, which in its simplest form indicates that (Higgs, & Smith, 2006; Kast, & Rosenzweig, 1972; Teece, 2018), these variables may be related. The literature is however not clear on the nature of the relationship between these variables, particularly if they are modelled together.

### **2.2.5.1 Conceptual model**

The proposed model tested as part of this study for objective eight is presented in Figure 1, below. PA is the independent variable, Individual Innovative Behaviour (IIB) and IWB are the outcome variables, PP, TL, and CE are the moderators, and WE and AC are the mediators.



**Figure 1: Performance appraisal-innovation model with mediator and moderator variables**

Six models were tested with the PROCESS macro for the Statistical Package for Social Science (SPSS). PA was the independent variable in all models and two mediators (WE and AC) were included in each model. The moderators (PP, TL, and CE) were subsequently added. The dependent variable was first IIB and after that IWB. The models contained two mediators and one moderator.

### 2.2.5.2 Hypotheses

The following are the hypotheses developed in this study to address objective eight:

- Model 1: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by PP
- Model 2: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by TL
- Model 3: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by CE
- Model 4: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by PP

- Model 5: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by TL
- Model 6: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by CE

Each of the hypotheses were evaluated in the PROCESS macro for SPSS to obtain the best-fit PA-innovation model.

### **2.3 Summary of the chapter**

Three matters are addressed in this chapter. Firstly, literature regarding the outcomes of PAs was presented, reporting on the hypotheses on the impact of PA on innovation that are typically tested. This literature was critically analysed and synthesised. The next matter reported on was the empirical evidence of the existence of the PA-innovation link – thus looking at which PA-innovation hypotheses were indeed confirmed. The third part of this chapter is devoted to PA-innovation literature specific to each of the five empirical objectives stated in the introductory chapter. The chapter concludes with a synthesis of what was found, thus achieving its goal.

The following chapter details the research methodology employed. The central goal of chapter three is to outline the population and sampling, research approach, measuring instruments, data collection, statistical analysis and the ethical considerations of this study.

## **CHAPTER 3: RESEARCH METHODOLOGY**

The research methodology was developed with a view to perform an analysis of the relative contribution of PA to innovation. This study consists of systematic literature reviews as well as empirical studies.

Some methodological matters (systematic literature review) related to this thesis have already been addressed in the first and second chapters, namely objective one (critically review the present body of knowledge pertaining to the link between PA and innovation), objective two (report on the magnitude of the effect of PA on innovation, based on a review of the literature) and objective three (report on the relative magnitude of the effect of PA, given other HRPs, on innovation, based on a review of the literature). More specific matters are addressed in this chapter, namely the empirical research objectives of the study. This chapter was concluded with an explanation of specifics regarding methodology as pertaining to the different empirical objectives.

### **3.1 Empirical research objectives**

To restate the empirical research objectives as presented in chapter one is as follows:

- Objective 4: Empirically investigate the magnitude of the effect of PA, and its individual items, relative to other organisational variables, on innovation, across employees (in general).
- Objective 5: Empirically investigate the magnitude of the effect of PA, and its individual items, relative to other organisational variables, on innovation, within (specific) organisations.
- Objective 6: Empirically investigate the relative magnitude of the effect of PA, given other HRPs, on innovation, across employees (in general).
- Objective 7: Empirically investigate the relative magnitude of the effect of PA, given other HRPs, on innovation, within (specific) organisations.
- Objective 8: Empirically test different models on the PA-innovation link, applying mediators such as WE and AC, and moderators such as PP, TL, and CE.

Achieving these empirical research objectives allowed for the realisation of the principal research aim which was to quantify the position of PA as an antecedent to innovation in the workplace, both across employees and within South African organisations.

### **3.2 Population, sampling and data collection**

In this study, the population was comprised of all employees and all organisations. Only employees from South African organisations formed part of the study, this being due to limiting factors such as geographic proximity, availability, and accessibility of the target population, as well as the costs and time involved in going beyond the borders of South Africa.

The sample for the organisations was not random, but rather a convenience sample. Once the organisations had been identified, respondents were selected at random from each of the organisation's employee records.

The data in this study was collected as part of a research project led by Professor Renier Steyn. This data consisted of 3 180 employees drawn from 53 organisations within South Africa, representing the private sector, parastatals, and government departments. The data was collected in accordance with the ethics guidelines of the University of South Africa (UNISA), and permission was obtained from the UNISA Research Ethics Review Committee to use the data as secondary data.

### **3.3 Research approach**

A cross-sectional survey design, which focused on quantitative data, was used for this objective. Bryman (2012), Punch (1998) and Punch (2005) note that a quantitative research design strategy is applicable for this type of study as it readily allows the establishment of relationships between variables.

### **3.4 Measuring instruments**

The PA questionnaire (Steyn, 2010), the IIB questionnaire (Kleynsen, & Street, 2001), the IWB questionnaire (De Jong, & Den Hartog, 2010), the PP scale (Bateman, & Crant, 1993), a part of the Leadership scale, specifically the TL scale portion (Wolins, 2012), the CE instrument (Strydom, 2013), the Utrecht WE scale-9 (Schaufeli, & Bakker, 2004), a part of the Organisational Commitment scale, specifically the AC scale portion (Allen, & Meyer, 1990), and the HRP scale (Nyawose, 2009) were the nine instruments utilised in this study. In this study, two measures of individual innovation in the workplace were assessed, namely IIB and IWB.



- The quality of a PA system questionnaire, developed by Steyn (2010), was employed to assess the perceived effectiveness of PA systems in organisations. This questionnaire is based on human resource management literature (Cascio, 2010; Grobler, Wörnich, Carrell, Elbert, & Hatfield, 2006; Noe, Hollenbeck, Gerhart, & Wright, 2008; Snell, & Bohlander, 2007; Swanepoel, Erasmus, & Schenk, 2008) which describes the characteristics of an effective PA system. Grobler, Wörnich, Carrell, Elbert, and Hatfield (2006) provide a full list of necessities for an effective PA system, and the majority of the literature was therefore adapted from these authors. The PA questionnaire is comprised of 18 statements designed to elicit the respondent's views on the PA process. A sample of the survey is presented in Appendix F. Respondents were invited to indicate their views for each item on a five-point scale ranging from 1 to 5 as follows: 1 (Absolutely false – this is true in +/-10% of all cases), 2 (Somewhat false – this is true in +/-35% of all cases), 3 (Neither true nor false), 4 (Somewhat true – this is true in +/- 75% of all cases), and 5 (Absolutely true – this is true in +/-90% of all cases). The lowest score that could be obtained was 18, and the highest was 90. A high score would be indicative that a customarily defined PA system was in place and functioning successfully, while a low score would indicate that the respondents were convinced that a conventionally defined PA system was not functioning in their organisation (Steyn, 2010). Furthermore, Steyn (2010) reports internal consistency to have a Cronbach alpha of 0.84 and significant correlations (in the predicted direction) with results such as turnover intentions ( $R=0.311$ ;  $p<0.01$ ), job satisfaction ( $R=0.281$ ;  $p<0.01$ ) and employee engagement ( $R=0.318$ ;  $p<0.01$ ).
- The Individual Innovative Behaviour (IIB) questionnaire by Kleysen and Street (2001) was chosen to quantify IIB. According to Kleysen and Street (2001), there is a lack of studies on a multi-dimensional measure of IIB. The IIB questionnaire consists of 14 questions, randomly itemised to avoid possible response order bias. A sample of the survey is presented in Appendix G. Respondents were requested to indicate their views for each question on a six-point scale ranging from 1 (Never) to 6 (Always). The lowest score that could be obtained was 14 and the highest 84. Each of the 14 items was prefaced with the following question: “In your current job, how often do you...” (Kleysen, & Street, 2001: 288). Kleysen and Street (2001) report that a measure of inter-correlation between the 14 questions resulted in a Cronbach alpha of 0.95 and good construct validity. All five factors are strongly correlated with each other, with

the highest correlation being between application and formative investigation ( $R=0.81$ ;  $p<0.01$ ) and the lowest between championing and generativity ( $R=0.68$ ;  $p<0.01$ ). Kleysen and Street (2001) thus suggest that the 14 items can be combined into a single measure of innovative behaviour, and this was done for this research.

- The Innovative Work Behaviour (IWB) questionnaire from De Jong and Den Hartog (2010) was additionally selected as it measures IWB. The IWB questionnaire consists of 10 questions. A sample of the survey is presented in Appendix H. The existing IWB questionnaire had to be modified for the purposes of this study. No measurement scale was provided in the De Jong and Den Hartog (2010) article. A scale was therefore introduced, ranging from (0) Never to (6) Always. The lowest score that could be obtained was 0 and the highest 60. The following is a question from the original IWB questionnaire: “How often does this employee...pay attention to issues that are not part of his daily work?” (De Jong, & Den Hartog, 2010: 29). This format did not suit the study, which emphasises the views of individuals concerning their IWB. All ten items of the questionnaire were thus amended to begin “As an employee how often do you...” instead of “How often does this employee...”. De Jong and Den Hartog (2010) report that the instrument is adequately reliable (Cronbach alpha $>0.7$ ). According to De Jong and Den Hartog (2010), there is clear evidence that employee’s innovation outputs ( $R=0.35$ ;  $p<0.01$ ), participative leadership ( $R=0.25$ ;  $p<0.01$ ) and external work contacts ( $R=0.27$ ;  $p<0.01$ ) correlate with IWB and this points to good criterion validity. The adapted version of the instrument was used for this research.
- The Proactive Personality (PP) scale, developed by Bateman and Crant (1993), is comprised of 17 statements designed to elicit the respondent’s views on proactive behaviour. A sample of the survey is presented in Appendix I. Respondents were invited to indicate their views for each statement on a five-point scale ranging from 0 to 4 as follows: 0 (Strongly disagree), 1 (Disagree), 2 (Not sure), 3 (Agree), and 4 (Strongly agree). Likewise, the lowest score that could be obtained was 0 and the highest 68. Bateman and Crant (1993) report internal reliability with a Cronbach alpha of 0.89. By the same token, Bateman and Crant (1993) argue that the proactive scale was significantly correlated to all three criterion variables, which is indicative of criterion validity, while discriminant validity was exposed between the proactive scale and

intelligence, neuroticism, agreeableness, openness, private self-consciousness, and locus of control.

- The Leadership scale questionnaire developed by Avolio, Bass, and Jung (1999) is used to assess transactional and transformational leadership (TL) and consists of 21 items. A sample of the survey is presented in Appendix J. The focus of this portion of the study was on TL rather than on transactional leadership, as Sethibe and Steyn (2016) indicate that there is no direct relationship between transactional leadership and innovation, whereas TL is positively and significantly related to innovation. The TL scale portion of the questionnaire consists of 12 items, as described by Wolins (2012), and only this part was used for this research. Respondents were requested to indicate their views for each item on a five-point scale ranging from 0 (Not at all) to 4 (Frequently, if not always). The minimum score on the TL scale portion of the questionnaire would be 0 and the maximum 48. Strydom (2013) reports reliability as having a Cronbach alpha of 0.87, while Sethibe and Steyn (2016) report a Cronbach alpha of 0.94 for the TL scale portion. In a study by Antonakis, Avolio, and Sivasubramanian (2003), these authors' results indicate that the Leadership scale questionnaire is both reliable and valid.
- The brief CE assessment instrument by Strydom (2013) was chosen to quantify CE climate. The CE instrument consists of 20 items and respondents were requested to indicate their views for each item on a scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). A sample of the survey is presented in Appendix K. The minimum score on the CE instrument would be 20 and the maximum 100. A high score would indicate that respondents are of the view that there are high levels of entrepreneurial support in the organisation, while a low score would show low support for entrepreneurship (Strydom, 2013). Strydom (2013) reports an adequate reliability score (Cronbach alpha=0.810) for the total CE instrument, while also reporting Cronbach alphas of 0.731, 0.825, 0.740, 0.689, and 0.574 for the subsections management support, work discretion, rewards, time available, and organisation boundaries respectively. Outcomes with regard to the organisation boundaries subsection should be viewed with some caution, particularly due to its Cronbach alpha being below 0.6. Entrepreneurial spirit intensifies with a rise in employee engagement, organisational commitment, and job satisfaction and this is indicative of concurrent validity (Strydom, 2013). Furthermore,

Strydom (2013) reports that, when the factor analysis was concluded, all items loaded as expected, with values above 0.5 suggesting factorial validity for the CE instrument.

- According to Schaufeli and Bakker (2004) and Schaufeli, Bakker and Salanova (2006) the Utrecht Work Engagement (WE) scale-9 includes the three founding facets of WE: vigour, dedication, and absorption. This questionnaire consists of nine statements (three vigour statements, three dedication statements, and three absorption statements) that are randomly listed to avoid potential response order bias. A sample of the survey is presented in Appendix M. Respondents were requested to indicate their views for each statement on a seven-point scale ranging from 0 to 6 as follows: 0 (Never – never), 1 (Almost Never – a few times a year or less), 2 (Rarely – once a month or less), 3 (Sometimes – a few times a month), 4 (Often – once a week), 5 (Very Often – a few times a week), and 6 (Always – every day). Schaufeli and Bakker (2004) report that, for all nine statements, the Cronbach alpha varies from 0.85 to 0.94 (median=0.91) across studies done in nine countries. Schaufeli and Bakker (2004) further explain that the Cronbach alpha value for the total data set was 0.9. Schaufeli, Bakker, and Salanova (2006: 701) state that the “factorial validity of the WE scale was demonstrated using confirmatory factor analysis and the three scale scores have good internal consistency and test-retest reliability”.
- The Organisational Commitment scale is used to measure organisational commitment and the questionnaire consists of 24 items. The focus of this portion of the study was on AC rather than normative or continuance commitment, as Lamba and Choudhary (2013), as well as Wright and Kehoe (2007), indicate that AC is far more important to HRPs and organisational performance. The AC scale portion of the questionnaire consists of eight items. A sample of the survey is presented in Appendix N. Respondents were requested to indicate their views for each item on a scale as follows: 1 (Strongly disagree), 2 (Moderately disagree), 3 (Slightly disagree), 4 (Neither agree nor disagree), 5 (Slightly agree), 6 (Moderately agree), and 7 (Strongly agree). The minimum score on the AC scale portion of the questionnaire would be 8 and the maximum 56. A high score would indicate that respondents are of the view that there are high levels of commitment and a low score would show low commitment. Allen and Meyer (1990) report that the reliability (i.e., coefficient alpha) for the AC scale is 0.87 and the internal consistency is 0.86. While, Steyn, (2012) reports a Cronbach alpha of 0.82 for the

organisation commitment scale. Allen and Meyer (1990) further explain that convergent validity is evident since the Organisational Commitment scale correlated significantly with the AC scale.

- The Human Resource Practice (HRP) scale by Nyawose (2009) was employed to assess the apparent effectiveness of HRPs. This questionnaire is comprised of 21 statements, arranged according to seven HRPs (training and development, compensation and rewards, PA, supervisor support, staffing, diversity management, and communication and information sharing) and with each HRP area containing three statements. A sample of the survey is presented in Appendix L. Respondents were invited to indicate their perceptions for each item on a five-point scale as follows: 1 (Strongly disagree), 2 (Disagree), 3 (Not sure – uncertain), 4 (Agree), and 5 (Strongly Agree). The lowest possible score would be 3, and the highest 15, per HRP. Also, the highest score that could be obtained per HRP was 15 and the lowest 3. A high score would mean that respondents are of the view that HRPs were effective and a low score would show dissatisfaction with HRPs (Steyn, 2012). Nyawose (2009) reports reliability scores ranging from 0.74 to 0.93 for these HRPs, as well as significant correlations (in the expected direction), with outcomes such as occupational commitment and turnover intentions. Furthermore, Steyn (2012) and, Steyn and Grobler (2014) report Cronbach alphas of 0.87, 0.74, 0.81, 0.75, and 0.88 for five HRPs, namely compensation and rewards, staffing, PA, diversity management, and training and development respectively. In the same study by Steyn and Grobler (2014), these authors' results indicate that the HRP scale is both reliable and valid. To further support the validity of the HRP scale, Steyn (2012) found that HRPs correlated positively with job satisfaction and negatively with the intention to quit.

These instruments were selected based on their past performance regarding reliability and validity, and they fit the aims of the study.

### **3.5 Statistical analysis and decision making**

SPSS was used to conduct all statistical analysis in this study, except for the confirmatory factor analysis, which was performed using the lavaan package which is part of the R statistical language, and the PROCESS macro for SPSS which was used for the conceptual model assessment.

The first step was to calculate frequencies in order to provide demographic characteristics of respondents. Basic descriptive statistics were computed for the independent and dependent variables. These included means and standard deviations. Then, Cronbach alphas were computed to confirm internal consistency (reliability) of all nine measurement instruments. Following the recommendations of Bhatnagar, Kim and Many (2014), Hair, Black, Babin, and Anderson (2009), Montshiwa and Moroke (2014), and Ursachi, Horodnic, and Zait (2015), the reliability of the instruments was deemed to be satisfactory when the Cronbach alpha was above 0.6.

As a prerequisite for factorial validity, Kaiser-Meyer-Olkin and Bartlett's test of sphericity was conducted to confirm the appropriateness of factor analysis for this study. The Kaiser-Meyer-Olkin measure of sampling adequacy at close to one would indicate that a factor analysis may be appropriate for this study. Child (2006), and Field (2013) suggest that the Kaiser-Meyer-Olkin measure of sampling adequacy is acceptable when above the minimum criterion of 0.5. The validity of the HRP scale for objectives six and seven was tested using the exploratory then the confirmatory factor analysis.

In the case of the exploratory factor analysis, the rotated component matrix was employed to organise the loadings appropriately as well as to group the factors through their factor loadings to provide interpretable results. The rotation method adopted was the varimax rotation as this is the most common option. Hair, Black, Babin, and Anderson (2009) suggest that loadings are acceptable when above 0.5, while loadings below 0.3 should be disregarded. According to Pallant (2007), ideally, three or more of the items should load on each of the factors.

In the case of the confirmatory factor analysis, the lavaan package was used for the analysis. A seven-factor model of training and development, compensation and rewards, PA, supervisor support, staffing, diversity management, and communication and information sharing was tested. Maximum likelihood estimation was selected and the latent factors were standardised to allow free estimation of all factor loadings. Awang (2012) and Hair, Black, Babin and Anderson (2009) suggest that the model fit is acceptable when the Tucker-Lewis-Index (TLI) is greater than 0.9, the Comparative Fit Index (CFI) is greater than 0.9, and the Root Mean Square Error of Approximation (RMSEA) is less than 0.05.

Correlation coefficients (for binary relationships) were also calculated between PA (as a single construct) and for innovation behaviour, as well as HRPs (as a single construct) and innovation behaviour, both across employees and within organisations. To determine the magnitude of the relationship between the variables, Pearson correlations (2-tailed) were used. These correlations were deemed statistically significant at the 0.01 level. Cohen's (1988) guidelines for the social sciences to calculate the practical significance of the Cronbach alphas is as follows: R above 0.5 is considered "large", R above 0.3 but below 0.5 is considered "medium", and R above 0.1 but below 0.3 is considered "small".

Three regression analyses were then conducted at each of the employee level and the organisational level. The first of these analyses were performed to calculate how the 18 items of PA, and the different subscales of HRPs, predict IIB and IWB. This was followed by identifying which items of PA, and the subscales of HRPs, significantly and uniquely predict IIB and IWB. Lastly, an analysis was performed to test how PA (as a total score) and the control variables PP, CE and TL can be regressed to predict the dependent variables, IIB and IWB. The "Enter" option in SPSS was selected for the regression analysis where all the individual PA items and all the HRPs are regressed to predict individual innovation. In order to identify individual PA items, and the individual HRPs which contribute uniquely and significantly to predicting individual innovation, "Stepwise" regressions were performed using the "Stepwise" option in SPSS. To assess the importance of PA, compared to other organisational variables, PA and the control variables PP, CE and TL were regressed to predict innovation. Once again, the "Stepwise" procedure was followed so as to identify those variables which uniquely and significantly predict innovation.

When considering the models across organisations for objectives five and seven, validation of a universalistic model would be evident when all organisations display similar relationships between PA and innovation, as well as HRPs and innovation, with little variation between organisations. Another indicator of the universalistic perspective would be whether  $R^2$  was significant for the PA-innovation, as well as the HRPs-innovation link in all organisations. The same PA items and HRP subscales should relate to innovation across organisations and the relative contribution of antecedents should be ranked similarly across organisations. Finding unique sequences in which PA, as well as HRPs, relate to innovation would provide confirmation of a configurational model.

Validation of a configurational model would be seen if specific combinations of items or subscales frequently predict innovation, or should patterns of antecedents predict innovation significantly.

The mediation and moderation models were assessed with the PROCESS macro for SPSS, developed by (Hayes, 2013), for objective eight. PROCESS performs centring automatically and also utilises bootstrapping to calculate standard errors and confidence levels for the significance of effects.

Model estimation in PROCESS is typically undertaken with ordinary least squares regression-based path analysis, but it is taken further with conditional process analysis, a class of models that allows mechanisms (i.e., indirect effects in a path model) to vary systematically as a function of one or more moderator variables. Latent variables were not modelled in PROCESS as in structural equation modelling, but rather the calculated averages.

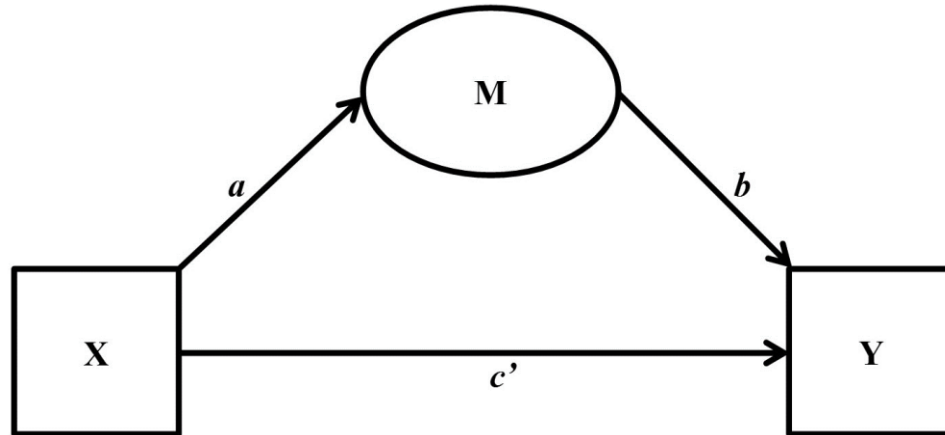
The Sobel test was used to test the significance of the mediation effect. The cut-off point for statistical significance was taken as  $p < 0.01$ . Preacher and Hayes (2004) indicate that the Sobel test functions well only in large samples, and the sample size in this study is relatively large ( $N = 3180$ ).

### **Application of basic mediation analysis**

Baron and Kenny (1986) identify a construct to be a mediator to the level that it explains the relationship between the predictor (i.e., PA) and the criterion (i.e., IIB). A sample of the statistical diagram for the PROCESS model for basic mediation is shown in Figure 2, below. Baron and Kenny (1986) subsequently suggest that a construct, e.g., WE, is understood to be a mediator if the following criteria are met:

- Steps
1. X significantly predicts Y (i.e.,  $c \neq 0$ )
  2. X significantly predicts M (i.e.,  $a \neq 0$ )
  3. M significantly predicts Y controlling for X (i.e.,  $b \neq 0$ )
  4. The influence of X on Y falls significantly when M is entered at the same time with X as a predictor of Y (i.e.,  $c' \ll c$ ) (The cut-off point was taken as  $p < 0.01$ )





**Figure 2: Sample statistical diagram for PROCESS model 4 (Basic mediation model)**

Preacher and Hayes (2008) summarise the preceding paragraph, explaining that these criteria in essence entail paths  $a$ ,  $b$ , and  $c$  to be significant and  $c'$  to be smaller than  $c$  by a non-trivial amount. Considering point one (Hayes, 2012), suggests that present philosophy about mediation analysis does not need confirmation of a total effect before the estimation of direct and indirect effects.

The causal variable was set as  $X$ , i.e., PA, and the outcome variable, or  $Y$  variable, as IIB. Finally, the mediator i.e.,  $M$ , represent WE. The basic mediational model is described as the variable  $X$  is presumed to cause  $M$ , which in turn, is presumed to cause  $Y$ . If there were full mediation, then the causal effect of  $X$  on  $Y$  controlling for  $M$  would be zero. For the estimates below to be valid, it is assumed that there is no measurement error in  $M$ . Moreover, it is assumed that there are no unmeasured common causes of  $M$  and  $Y$ . Finally, it is assumed that  $Y$  does not cause  $M$  (Kenny, & Judd, 2014).

In this study, the models that were tested contained two mediators and one moderator, as illustrated in Figure 1 and later on in Figure 13 again.

### **3.6 Ethical considerations**

The application for ethical clearance and the review process were undertaken to ensure that the highest level of ethical conduct would be maintained and that the rights of respondents would be protected. The researcher completed the research ethics application for research involving secondary data as presented in Appendix O. Ethical clearance was obtained from the UNISA

Research Ethics Review Committee (approval number: 2018\_SBL\_DBL\_003\_SD) for this study and a copy of the ethics approval certificate is reflected in Appendix P.

This study makes use of secondary data only. The data was collected as part of a study, directed by Professor Renier Steyn. The data was gathered for the purposes of conducting academic research. Originally, it was used in the mini-dissertations of Master of Business Leadership (MBL) students but it has now been integrated into a more complex project, namely this Doctor of Business Leadership (DBL) study. The use of the data for larger projects was specified in the original application.

The data contains information on individual perceptions. No personal identifiers were attached to the data. The sample size is relatively large and, as such, several respondents may have similar profiles. However, no reporting was done on individuals and only aggregated data was reported. In summary, no individuals were (or can be) identified.

Approval for the collection of the original data by the MBL students has already been granted by the UNISA Research Ethics Review Committee (approval number: 2014\_SBL\_018\_CA), meeting all the requirements for the protection of human subjects. Also, the organisations in which the original data was collected were not named (the data has been cleaned of all identifiers). In summary, the original data does not include any personal or other identification details of the respective respondents or of the participating organisations. The results of this research were reported responsibly, under the supervision of Professor Renier Steyn, as well as the UNISA Graduate School of Business Leadership (GSBL) Colloquium.

### **3.7 Summary of the chapter**

The empirical research objectives of this study are addressed in this chapter. The chapter concludes with an explanation of specifics regarding methodology as pertaining to the different empirical objectives, thus achieving its goal.

Chapter four is the presentation and analysis of results chapter. This chapter presents a record of the results obtained from the study and an analysis of these results.

## **CHAPTER 4: PRESENTATION AND ANALYSIS OF RESULTS**

The research analysed the PA-innovation link through a series of consecutively more complex tests. Before presenting the results for the empirical objectives, the demographics of the respondents, as well as the descriptive statistics, are laid out. Note that this chapter presents not only the results of the research but also an operational discussion of each of the statistics related to each objective. The higher level discussion and integration of the results follows in the final chapter. The empirical investigations that were conducted as part of this study are presented per objective, below.

### **4.1 Demographics of respondents**

In this study, the data was drawn from the responses of 3 180 employees drawn from 53 organisations within South Africa, representing the private sector, parastatals, and government departments.

#### **4.1.1 Gender**

The respondents in this study were categorised into the two recognised gender groups. The 2016 Quarterly Labour Force Survey shows that the gender demographic across South Africa as a whole is almost equally spread (Statistics South Africa, 2016), and this is closely aligned to the gender sample in this study. A total of 1 771 (55.7%) respondents listed their gender as male and 1 372 (43.1%) registered their gender as female, while the missing data amounted to 37 (1.2%).

#### **4.1.2 Race**

In this study, respondents were categorised into four well-known race groups and this data is closely aligned to the Quarterly Labour Force Survey in the sense that, in the larger South African context, Blacks make up the major workforce group, followed by Whites, Coloureds, and Asians in descending order (Statistics South Africa, 2016). A total of 263 (8.3%) respondents marked Asian, 1 830 (57.5%) Black, 263 (8.3%) Coloured, and 787 (24.7%) White, while the missing data is 37 (1.2%) in this study.

### **4.1.3 Age**

The 2016 Quarterly Labour Force Survey indicates that the age of the South African workforce ranges from 15 to 64 years (Statistics South Africa, 2016), and this is closely aligned to the respondents in this study whose ages range from 20 to 72 years, with a mean of 37.81 and a standard deviation of 9.10.

### **4.1.4 Educational qualifications**

A total of 934 (29.4%) respondents hold a bachelor's degree or higher, 1 274 (40.1%) possess a diploma, 789 (24.8%) have matric, and 143 (4.5%) have less than 12 years of schooling, while the missing data is 40 (1.3%).

### **4.1.5 Management and tenure**

Those in management positions totalled 1 156 (36.4%) while those in non-management positions accounted for 1 983 (62.4%), while the missing data was 41 (1.3%). As far as tenure at their current employer is concerned, this varied between one month and 42 years, with a mean of 8.49 and a standard deviation of 7.45.

### **4.1.6 Job categorisation**

In this study, respondents were grouped into five job sets. A total of 72 (2.3%) respondents form part of an unskilled and defined decision-making group, 626 (19.7%) form part of a semi-skilled and discretionary decision-making group, 1 359 (42.7%) are skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents, 893 (28.1%) are professionally qualified, experienced specialists and middle management, and 163 (5.1%) are members of top or senior management, while the missing data is 67 (2.1%). Respondents in core businesses totalled 1 432 (45.0%) and those in support businesses represented 1 730 (54.4%), while the missing data was 18 (0.6%).

### **4.1.7 Economic sectors**

In this study, the organisations were categorised into three sectors already alluded to earlier. A total of 1 981 (62.3%) companies fall within the private sector, 480 (15.1%) are parastatal, and

719 (22.6%) are government departments, for example, the Department of Trade and Industry, the Department of Tourism, and so on.

From the abovementioned respondents' demographic characteristics, it is evident that the respondents represent a broad cross-section of the South African workforce.

#### 4.2 Descriptive data

Table 5 presents the total number of observations, the means and standard deviations of all constructs included in this study, as well as for the individual PA items. Cronbach alphas for the instruments are also presented in the last column.

**Table 5: Descriptive data (N=3 180)**

PA items / Scale	Item content	Mean	Std. Dev.	$\alpha$
PA <sub>1</sub>	The PA system at my organisation is the primary mechanism used to assess the performance of the employees.	3.586	1.296	-
PA <sub>2</sub>	I received formal training on the PA system used by my organisation and understand the system fully.	3.193	1.449	-
PA <sub>3</sub>	The consequences and rewards allocated are reflective of the individuals' scores or rating on the PA system.	3.210	1.357	-
PA <sub>4</sub>	All the performance targets set and recorded on the PA system add significant value to the success of the business.	3.373	1.302	-
PA <sub>5</sub>	Only elements relevant to the success in my job are assessed and all elements relevant to success in my job are included in the performance standard.	3.275	1.260	-
PA <sub>6</sub>	My manager consistently gives me higher or lower marks than what a fair rater would do.	3.352	1.330	-
PA <sub>7</sub>	When my performance stays consistent, but factors beyond my control cause a decline in my outputs, my PA remains consistent.	2.979	1.291	-
PA <sub>8</sub>	The PA system is not biased and differentiates between the more effective and less effective performers.	3.055	1.321	-
PA <sub>9</sub>	The PA system in my organisation is easy to administer, from the perspective of both the manager and the subordinate.	3.101	1.341	-
PA <sub>10</sub>	The PA system is accepted and supported by all parties in my organisation.	3.055	1.328	-

PA items / Scale	Item content	Mean	Std. Dev.	$\alpha$
PA <sub>11</sub>	The decisions that are made on the grounds of the PAs are relevant, sound and do not often lead to labour disputes.	3.114	1.288	-
PA <sub>12</sub>	The PA system is well aligned with the business strategy.	3.325	1.291	-
PA <sub>13</sub>	Managers negotiate each of their team member's specific, measurable and stretching performance targets.	3.247	1.302	-
PA <sub>14</sub>	Managers regularly review both unit and individual performance with those concerned and take appropriate action to ensure that targets are reached or exceeded.	3.181	1.320	-
PA <sub>15</sub>	The effectiveness of the performance management system is formally evaluated at least once a year and appropriate improvements are made for the next cycle.	3.229	1.327	-
PA <sub>16</sub>	My input is taken into consideration for the improvements of the PA system for the next cycle.	2.946	1.352	-
PA <sub>17</sub>	Continuous assessment of my performance is being done regularly and recorded.	3.306	1.282	-
PA <sub>18</sub>	Formal feedback on my final PAs feedback is given by my manager.	3.607	1.326	-
PA	Performance Appraisal	58.133	16.072	0.930
IIB	Individual Innovative Behaviour	36.662	9.608	0.951
IWB	Innovative Work Behaviour	52.988	13.173	0.893
PP	Proactive Personality	53.792	8.971	0.843
CE	Corporate Entrepreneurship	65.743	9.321	0.762
TL	Transformational Leadership	2.516	0.972	0.946
WE	Work Engagement	37.998	10.156	0.900
AC	Affective Commitment	34.318	9.947	0.806

As reflected in Table 5, the individual PA item scores varied, with PA<sub>16</sub> showing the lowest mean (mean=2.946; standard deviation=1.352) and PA<sub>18</sub> showing the highest (mean=3.607; standard deviation=1.326). Also illustrated in Table 5, the different instrument scores varied, with TL showing the lowest mean (mean=2.516; standard deviation=0.972) and CE showing the highest (mean=65.743; standard deviation=9.321).

### **4.3 Research objective four: Performance appraisal and innovation**

To reaffirm, the fourth objective was to empirically investigate the magnitude of the effect of PA, and its individual items, relative to other organisational variables, on innovation, across employees (in general).

#### **4.3.1 Reliability**

As can be seen from Table 5, PA registers a high internal consistency (Cronbach alpha=0.930). Reliability was calculated for both the IIB and the IWB questionnaires, which resulted in Cronbach alphas of 0.951 and 0.893 respectively. Reliability for the 17-item PP scale was 0.843 and, for the 20-item CE instrument, the Cronbach alpha was 0.762. Lastly, for the 12-item TL scale, the Cronbach alpha was 0.946. All six scales have a Cronbach alpha above 0.6, which means that the reliability of all scales is acceptable.

#### **4.3.2 Validity**

An analysis of the relationships between the dependent variables in this study shows that convergent validity is evident since the IIB questionnaire correlated significantly (with a large effect) with the IWB questionnaire ( $R=0.683$ ;  $p<0.01$ ). The relationship between the independent variables and the dependent variables also provides evidence of divergent validity. The IIB questionnaire correlated with the PA questionnaire ( $R=0.196$ ;  $p<0.01$ ), and the IWB questionnaire correlated with the PA instrument ( $R=0.239$ ;  $p<0.01$ ). The fact that these correlations were not of practical significance suggest that the instruments measure different constructs.

Since convergent validity is a measure of variables that are related to each other (Trochim, Donnelly, & Arora, 2015), a larger correlation was expected between IIB and IWB than between PA and IIB or PA and IWB, as these two variables are theoretically similar. The correlations between IIB and PA, and between IWB and PA, may be low but are significant as PA may be an antecedent to IIB and IWB. The collected data thus provide some evidence of the validity of the measures used.

### 4.3.3 Correlative and regression analysis

Table 6 presents the results pertaining to the relationship between PA and antecedents to innovation.

**Table 6: Total sample correlative and regression analysis (N=3 180)**

Column 1	Column 2	Column 3	Column 4	Column 5
<b>Measure of innovation</b>	<b>PA and innovation</b>	<b>All items of PA and innovation</b>	<b>All items of PA and innovation (Optimal model)</b>	<b>PA and innovation with other control variables</b>
IIB	R=0.196; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.081; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.078; <i>p</i> <0.01; Items 4, 16, 2, 5,3 and 14	R <sup>2</sup> <sub>adjusted</sub> =0.239; <i>p</i> <0.01; Scales: PP, CE, PA, TL
IWB	R=0.239; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.106; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.105; <i>p</i> <0.01; Items 13, 17, 4, 16, 2, 15, 1 and 5	R <sup>2</sup> <sub>adjusted</sub> =0.266; <i>p</i> <0.01; Scales: PP, PA, CE, TL

In column 2, depicting the relationship between PA (as a composite score) and individual innovation, measured with different instruments, it can be reported that R=0.196 for IIB and R=0.239 for IWB. In both cases, the correlation coefficients were statistically significant. When considering the practical significance, R for IIB and IWB is “small”. Considering the coefficient of determination, 3.8% of the variance in IIB and 5.7% of the variance in IWB could be declared by PA. It is, therefore, practically insignificant.

The results of the regression are presented in column 3 where all the individual PA items of the PA questionnaire are regressed to predict individual innovation. The “Enter” option in SPSS was selected for this analysis. It can be reported that R<sup>2</sup><sub>adjusted</sub>=0.081 for IIB and R<sup>2</sup><sub>adjusted</sub>=0.106 for IWB, depicting the relationship between all items of PA and innovation, measured with different instruments. In both cases, the correlation coefficients were statistically significant. When considering the practical significance, R<sup>2</sup><sub>adjusted</sub> for IIB and IWB is “small” – using all the items of the PA instrument allowed for 8.1% of the variance in IIB and 10.6% of the variance in IWB to be declared. Though this is still practically insignificant, it seems that the items are a better predictor of innovation than are the aggregate scores.

In order to identify those individual PA items which contribute uniquely and significantly to predicting individual innovation, “Stepwise” regressions were performed using the “Stepwise”



option in SPSS. From column 4, it can be read that items 4, 16, 2, 5, 3 and 14 (listed in descending order of influence on innovation) of the PA questionnaire are the elements of PA which influence IIB uniquely and significantly, while items 13, 17, 4, 16, 2, 15, 1 and 5 (listed in descending order of influence on innovation) of the PA questionnaire are the elements of PA which influence IWB uniquely and significantly.

Items common to predicting IIB and IWB were as follows:

- Item 2: I received formal training on the PA system used by my organisation and understand the system fully.
- Item 4: All the performance targets set and recorded on the PA system add significant value to the success of the business.
- Item 5: Only elements relevant to the success in my job are assessed and all elements relevant to success in my job are included in the performance standard.
- Item 16: My input is taken into consideration for the improvements of the PA system for the next cycle.

Items unique to predicting IIB read as follows:

- Item 3: The consequences and rewards allocated are reflective of the individuals' scores or rating on the PA system.
- Item 14: Managers regularly review both unit and individual performance with those concerned and take appropriate action to ensure that targets are reached or exceeded.

Items unique to predicting IWB read as follows:

- Item 1: The PA system at my organisation is the primary mechanism used to assess the performance of the employees.
- Item 13: Managers negotiate each of their team member's specific, measurable and stretching performance targets.

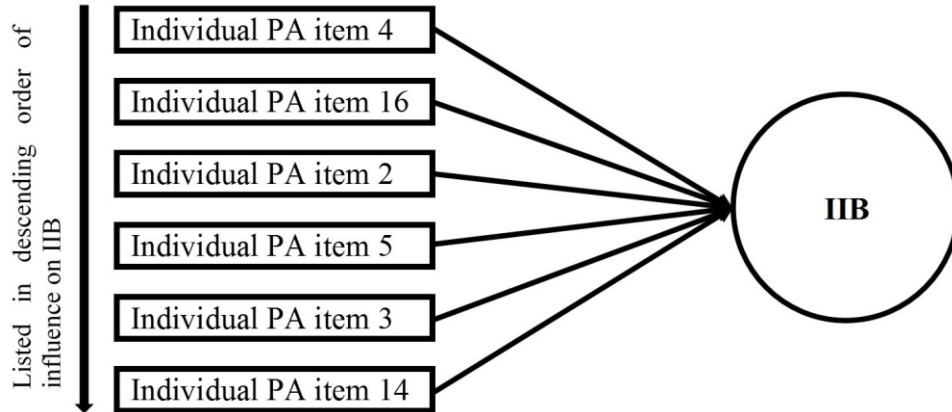
- Item 15: The effectiveness of the performance management system is formally evaluated at least once a year and appropriate improvements are made for the next cycle.
- Item 17: Continuous assessment of my performance is being done regularly and recorded.

From the above, it is clear that four of the 18 items are common predictors of innovation, while six of the 18 are unique predictors. Considering these important predictors, two themes may be extracted: 1) a clear link with organisational performance, and 2) communication or negotiation between management and the employee.

To assess the relative importance of PA, compared to other organisational variables, PA and the control variables PP, CE and TL were regressed to predict innovation. Once again, the “Stepwise” procedure was followed so as to identify those variables which uniquely and significantly predict innovation. In the comprehensive model, where the different antecedents were included, 23.9% of the variance in IIB was explained (column 5). This is compared to the 8.1% variance explained to PA as an individual predictor (column 3). Staying with the comprehensive model, where the different antecedents were included, 26.6% of the variance in IWB was explained (column 5). This is compared to the 10.6% variance explained to PA as an individual predictor (column 3). It can also be reported from column 5 that the variables, PP, CE, PA, and TL (listed in descending order of influence on innovation) have an influence on IIB, while PP, PA, CE, and TL (listed in descending order of influence on innovation) have an influence on IWB. In the case of IIB, PA was the third most important predictor and, in the case of IWB, the second most important predictor. It is essential to note that PA was a predictor of both measures of innovation. Interestingly, all the independent variables were included in the models presented, suggesting that they are indeed antecedents to innovation.

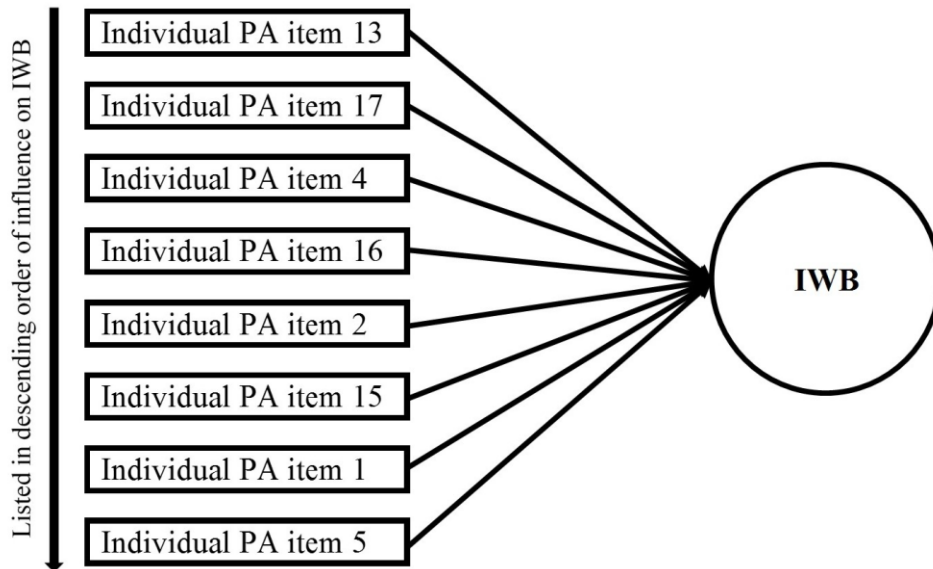
#### **4.3.3.1 Graphical representation of empirical links**

The diagrams below provide a graphical representation of the empirical relationships identified as part of research objective four. Figure 3 provides a model of the individual PA items which contribute uniquely and significantly to predicting IIB.



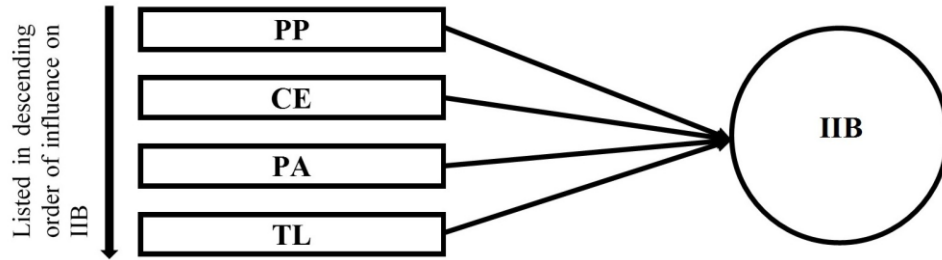
**Figure 3: Performance appraisal items which contribute to individual innovative behaviour**

Figure 4 provides a model of the individual PA items which contribute uniquely and significantly to predicting IWB.



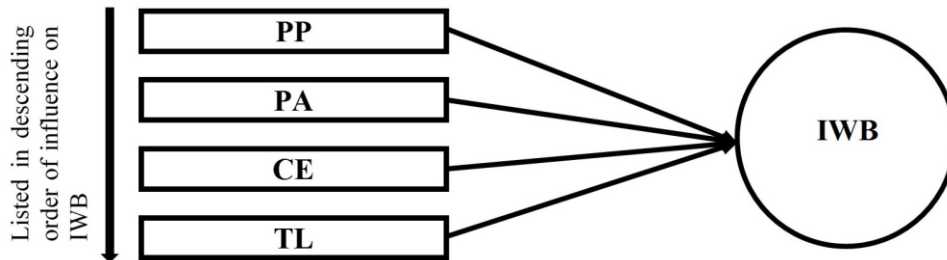
**Figure 4: Performance appraisal items which contribute to innovative work behaviour**

Figure 5 provides a model of the relative importance of PA, compared to other organisational variables (PP, CE, and TL), on IIB.



**Figure 5: Performance appraisal relative to other variables on individual innovative behaviour**

Figure 6 provides a model of the relative importance of PA, compared to other organisational variables (PP, CE, and TL), on IWB.



**Figure 6: Performance appraisal relative to other variables on innovative work behaviour**

The models reflected above represent the empirical relationships of the effect of PA, and its individual items, relative to other organisational variables, on innovation, across employees.

#### **4.4 Research objective five: Performance appraisal and innovation within organisations**

To reaffirm, the fifth objective was to empirically investigate the magnitude of the effect of PA, and its individual items, relative to other organisational variables, on innovation, within (specific) organisations.

##### **4.4.1 Reliability**

As per objective four above, reliability is adequate for each of the instruments as seen from Table 5.

##### **4.4.2 Validity**

Validity is as per research objective four above.

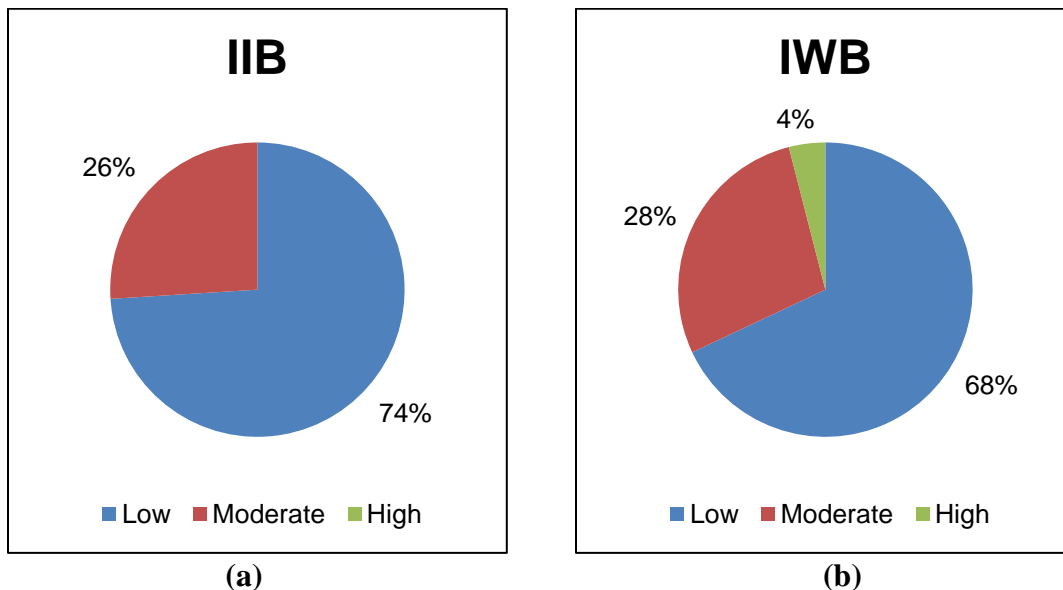
#### 4.4.3 Correlative and regression analysis

Table 7 presents four columns (Column 2 to Column 5) of results for the individual samples drawn from the 53 organisations. In column 2, the correlation coefficients are presented for PA as a single construct and innovation behaviour. The results of the regression analysis, where all the individual PA items are regressed to predict individual innovation, are presented in column 3. Column 4 presents the results where individual PA items which contribute uniquely and significantly to predicting individual innovation are identified. The results of the regression, where PA (as a single construct) and the control variables were regressed to predict innovation, are presented in column 5. As it is not viable to present data for all 53 organisations in one table, a small section is presented here. However, Table 7 is followed by a comprehensive summary of the complete table.

**Table 7: Organisation specific correlative and regression analysis (N=60)**

Column 0 Organisation	Column 1 Measure of innovation	Column 2 PA and innovation	Column 3 All items of PA and innovation	Column 4 All items of PA and innovation (Optimal model)	Column 5 PA and innovation with other control variables
1	IIB	R=0.480; $p<0.01$	$R^2_{\text{adjusted}}=0.332$ ; $p<0.01$	$R^2_{\text{adjusted}}=0.273$ ; $p<0.01$ Items 7 and 14	$R^2_{\text{adjusted}}=0.46$ ; $p<0.01$ Scales: TL, PP
	IWB	R=0.479; $p<0.01$	$R^2_{\text{adjusted}}=0.285$ ; $p<0.01$	$R^2_{\text{adjusted}}=0.302$ ; $p<0.01$ Items 4 and 11	$R^2_{\text{adjusted}}=0.292$ ; $p<0.01$ Scales: PA, PP
4	IIB	R=0.005; $p<0.01$	$R^2_{\text{adjusted}}=0.091$ ; $p<0.01$	$R^2_{\text{adjusted}}=0.137$ ; $p<0.01$ Item 1	$R^2_{\text{adjusted}}=0.137$ ; $p<0.01$ Scales: PP, CE
	IWB	R=0.014; $p<0.01$	$R^2_{\text{adjusted}}=0.382$ ; $p<0.01$	$R^2_{\text{adjusted}}=0.125$ ; $p<0.01$ Item 1	$R^2_{\text{adjusted}}=0.274$ ; $p<0.01$ Scales: PP
52	IIB	R=0.154; $p<0.01$	$R^2_{\text{adjusted}}=0.138$ ; $p<0.01$	$R^2_{\text{adjusted}}=0.170$ ; $p<0.01$ Items 6 and 5	$R^2_{\text{adjusted}}=0.258$ ; $p<0.01$ Scales: PP
	IWB	R=0.232; $p<0.01$	$R^2_{\text{adjusted}}=-0.006$ ; $p<0.01$	$R^2_{\text{adjusted}}=0.098$ ; $p<0.01$ Item 5	$R^2_{\text{adjusted}}=0.226$ ; $p<0.01$ Scales: PP, PA

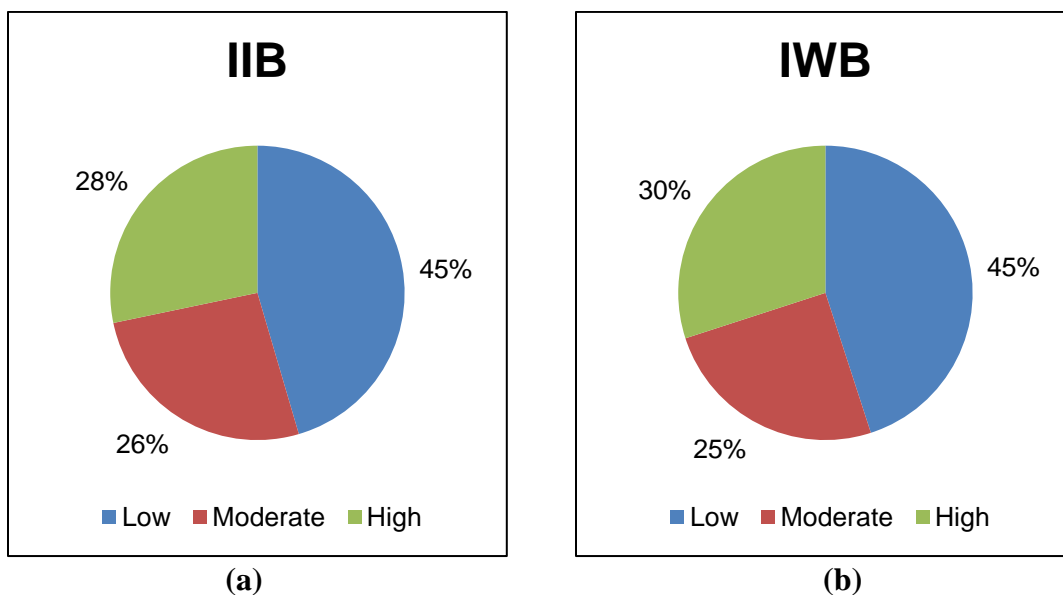
In column 2, depicting the relationship between PA (as a composite score) and individual innovation, measured with different instruments per organisation, it can be reported that all organisations displayed statistically significant coefficients between PA and IIB, with  $p < 0.01$ . The average coefficient for all 53 organisations was 0.215. In total, 0/53 (0%) coefficients could be deemed as being of high practical significance ( $R > 0.5$ ), 14/53 (26%) as being of moderate, practical significance ( $R > 0.3$ ) and 39/53 (74%) as being of low practical significance ( $R > 0.1$ ). Staying with column 2, but focusing now on the relationship between PA and IWB, it can be reported that all 53 organisations displayed statistically significant coefficients between PA and IWB, with  $p < 0.01$ . The average coefficient was 0.252. In total, 2/53 (4%) coefficients could be deemed as being of high practical significance ( $R > 0.5$ ), 15/53 (28%) as being of moderate, practical significance ( $R > 0.3$ ), and 36/53 (68%) as being of low practical significance ( $R > 0.1$ ). In both, IIB and IWB there is low practical significance in a larger proportion of the organisations. The results with regard to the practical significance of the coefficients between PA and IIB, as well as PA and IWB, are presented in Figure 7, below.



**Figure 7: Practical significance of the correlation coefficients between PA and innovation across organisations**

As seen in Figure 7, in almost three quarters ( $\frac{3}{4}$ ) of the cases, the PA total scores correlated, with a low significance, with innovation.

In column 3, the results of the regression are presented where all individual PA items of the PA instrument are regressed to predict individual innovation at the organisational level. The “Enter” option in SPSS was selected for this analysis. It can be reported that all organisations displayed statistically significant coefficients between PA and IIB, with  $p < 0.01$ . Using the regression approach yielded much higher statistically significant coefficients. The average coefficient was 0.350. In total, 15/53 (28%) of the coefficients could be deemed as being of high practical significance, 14/53 (26%) as being of moderate, practical significance and 24/53 (45%) as being of low practical significance. Continuing with column 3, now concentrating on the relationship between PA and IWB, all organisations displayed statistically significant coefficients for IWB, with  $p < 0.01$ . The average coefficient was 0.332. In total, 16/53 (30%) of the coefficients could be deemed as being of high practical significance, 13/53 (25%) as being of moderate, practical significance and 24/53 (45%) as being of low practical significance. In both IIB and IWB, there is low practical significance in a larger proportion of the organisations. The results with regard to the practical significance of the coefficients between PA and IIB, as well as PA and IWB, are presented in Figure 8, below.



**Figure 8: Practical significance of the regression coefficients between all items of PA and innovation across organisations**

As reflected in Figure 8, in 45% of the cases, the individual PA items correlated with a low significance with innovation. Whereas, in approximately 30% of the cases, the individual PA items correlated, with a high significance, with innovation.

Comparing the results in column 2 and column 3, it seems that following the regression approach, in which all the individual PA items are regressed to predict individual innovation, yielded better results than did use of the correlation approach to calculating the coefficients between PA (as a single construct) and innovation. The relationship when using all items was larger than when using PA as a single construct. This may suggest both that the items are better predictors of innovation and that a higher-level latent construct (which informs individual items rather than the total score) is responsible for the declared covariance.

“Stepwise” regressions – using the “Stepwise” option in SPSS – were performed in column 4 in order to identify individual PA items which contribute uniquely and significantly to predicting individual innovation at the organisational level. This analysis served to test a hypothesis on the relative importance of PA across organisations, but more specifically, to find patterns amongst PA items which predict innovation. This was important so as to gain statistics on testing hypotheses on the universalistic, contingency, and configurational perspectives of HRPs. It can be reported that all organisations displayed statistically significant coefficients between PA and IIB, with  $p < 0.01$ . The average coefficient was 0.425. This higher coefficient for column 4, when compared to column 3, was expected, as only a small number of items which contributed significantly were included, and the additional items which erode the regression coefficient were excluded. In total, 16/47 (34%) of the coefficients could be deemed as being of high practical significance, 16/47 (34%) as being of moderate practical significance, and 15/47 (32%) as being of low practical significance, while there is missing data for six organisations (organisations 2, 3, 10, 34, 36, and 50). The chains for the optimal models per organisation for IIB include 23 models with one variable, 13 with two variables, seven with three variables, one with four variables, two with five variables and one with eight variables. Organisation 38 had the most variables (eight) in its optimal model. The most common items were PA1, PA2, PA8, PA9, and PA17, as these items appear in seven of the 47 models. The next most common items were PA3, PA4, PA6, PA14, and PA16, as these appear in six of the models, followed by PA5 and PA15, which appear in five of the models. PA11 was the least common variable as it appears in only one of the models. To detect evidence of sequences in items predicting innovation, the two and three-variable models were analysed further. Repeating patterns occurred in 2/13 (15%) cases with two-variable models (PA2 and PA4), and zero cases in the three-variable models. However, real patterns are still absent.



Staying with column 4, all organisations displayed statistically significant coefficients between PA and IWB, with  $p < 0.01$ . The average coefficient was 0.363. In total, 17/48 (35%) of the coefficients could be deemed as being of high practical significance, 15/48 (31%) as being of moderate practical significance, and 16/48 (33%) as being of low practical significance, while there is missing data for five organisations (organisations 29, 34, 36, 50, and 53). The chains for the optimal models per organisation for IWB include 22 models with one variable, 17 with two variables, five with three variables, two with four variables and two with six variables. Organisations 18 and 38 had the most variables (six) in their optimal models. The most common item was PA13, as this item appears in 12 of the 48 models. The next most common item was PA2, as it appears in eight of the models, followed by PA17 which appears in seven of the models. PA1 was the least common variable as it appears in only one of the models. To detect evidence of sequences in items predicting innovation, the two and three-variable models were analysed further. Repeating patterns occurred in 2/17 (12%) cases with two-variable models (PA12 and PA13) and none in the three-variable models. However, real patterns are still absent.

In column 5, in order to assess the importance of PA, compared to other organisational variables, PA and the control variables PP, CE and TL were regressed to predict innovation. This analysis served to test a hypothesis on the relative importance of PA across organisations, but more specifically, to find patterns amongst the different human resource variables which predict innovation. This was important so as to gain statistics on testing hypotheses on the universalistic, contingency, and configurational perspectives of HRPs. Once again, the “Stepwise” procedure was followed so as to identify those variables which uniquely and significantly predict innovation at the organisational level. It is reported that all organisations displayed statistically significant coefficients between PA and IIB, with  $p < 0.01$ . The average coefficient was 0.415. In total, 21/49 (43%) of the coefficients could be deemed as being of high practical significance, 20/49 (41%) as being of moderate practical significance and 8/49 (16%) as being of low practical significance, while there is missing data for four organisations (organisations 2, 28, 50, and 53). The chains for IIB include 26 models with one variable, 21 with two variables and two with three variables. Organisations 8 and 15 had the most variables (three) in their models. The most common variable was PP, as this item appears in 42 of the 49 models. The next most common item was CE, as it appears in 13 of the models, followed by TL, which appears in 11 of the models, whereas PA was the least common variable as it appears in only eight of the models. To detect evidence of

sequences in items predicting innovation, the two and three-variable models were analysed further. Repeating patterns occurred in all 21 cases with two-variable models (the CE and PA combination occurred twice, PA and PP occurred five times, PP and TL occurred six times, and CE and PP occurred eight times), and in both cases in three-variable models (CE, PP, and TL). However, real patterns are still absent.

Still focusing on column 5, all organisations displayed statistically significant coefficients between PA and IWB, with  $p < 0.01$ . The average coefficient was 0.529. In total, 34/53 (64%) of the coefficients could be deemed as being of high practical significance, 13/53 (25%) as being of moderate practical significance and 6/53 (11%) as being of low practical significance. The chains for IWB include 23 models with one variable, 29 with two variables and one with three variables. Organisation 8 had the most variables (three) in its model. The most common variable was PP, as this item appears in 46 of the 53 models. The next most common item was TL, as it appears in 17 of the models, followed by CE, which appears in 13 of the models, whereas PA was the least common variable as it appears in only eight of the models. To detect evidence of sequences in items predicting innovation, the two-variable models were analysed further. Repeating patterns occurred in all 29 cases (the PA and PP pattern occurred eight times, PP and TL occurred 13 times, and CE and PP occurred eight times). However, real patterns are still absent.

#### **4.5 Research objective six: Performance appraisal, as part of human resource practices, and innovation**

To reaffirm, the sixth objective was to empirically investigate the relative magnitude of the effect of PA, given other HRPs, on innovation, across employees (in general).

##### **4.5.1 Reliability**

Table 8 presents all constructs (each construct consists of three items) included in this objective, as well as the individual HRP statements. The HRP scale consists of seven constructs or factors, and each construct or factor consists of three items. Cronbach alphas for the individual constructs and instruments are also presented in the last column.

**Table 8: Constructs, items of the human resource practice scale, and reliability coefficients**

<b>Constructs</b>	<b>No.</b>	<b>Statement</b>	<b><math>\alpha</math></b>
Training and development	1	My company is committed to the training and development needs of its employees.	0.849
	2	Employees are encouraged to accept education and training within the company.	
	3	This organisation has provided me with training opportunities enabling me to extend my range of skills and abilities.	
Compensation and rewards	4	My salary and benefits have been an adequate return for the time and energy demanded of me.	0.842
	5	I am satisfied with my company reward system to compensate good performance.	
	6	The company's compensation and reward system encourages team and individual contributions.	
PA	7	My company's performance management system is fair and based on clear objectives at the beginning of the term/year.	0.786
	8	The company has provided enough information regarding specific methods of the performance evaluation system.	
	9	Employees are allowed to formally communicate with supervisors/managers regarding the appraisal results.	
Supervisor support	10	My supervisor would personally use his/her power to help me solve my work problems.	0.845
	11	My supervisor always gives credit and encourages an employee for a job well done.	
	12	My supervisor often lets me know how well he/she thinks I am performing the job.	
Staffing	13	Proper company procedures and processes are always followed when staffing/recruitment decisions are made.	0.724
	14	Interview panels are used during the staffing process in this organisation.	
	15	All appointments in this organisation are based on merit (i.e., the best person for the job is selected, regardless of their personal characteristics).	
Diversity management	16	The company spends enough time and effort on diversity awareness related to race, gender and religion.	0.750
	17	Management is supportive of cultural difference in this organisation.	
	18	People living with disabilities have the employment opportunities in this organisation.	
Communication and information sharing	19	My company regularly provides information sharing sessions to all employees.	0.842
	20	Continuous improved communications between management and staff is stated as an important company objective and is being practiced.	

Constructs	No.	Statement	$\alpha$
	21	My company's communication channels are open and effective in dealing with matters that are relevant to employees.	
HRP		Human Resource Practice	0.932
IIB		Individual Innovative Behaviour	0.951
IWB		Innovative Work Behaviour	0.893

As can be seen from Table 8, the total HRP scale registers a high internal consistency (Cronbach alpha=0.932), and the individual scale reliabilities were all higher than 0.7. Reliability was calculated for the IIB, as well as the IWB questionnaire, which resulted in Cronbach alphas of 0.951 and 0.893 respectively. All three instruments have a Cronbach alpha above 0.6, which indicates that the reliability of all instruments is acceptable. Cronbach alphas of 0.849, 0.842, 0.786, 0.845, 0.724, 0.750 and 0.842 were also calculated for the seven HRPs: training and development, compensation and rewards, PA, supervisor support, staffing, diversity management, and communication and information sharing, respectively.

#### 4.5.2 Validity

The statistical analysis of the connection between the two innovation measures (dependent variables) demonstrates that convergent validity is evident since the IIB scale correlated significantly (with a large effect) with the IWB scale ( $R=0.683$ ;  $p<0.01$ ). The relationship between the HRP scale as a single construct (independent variable) and the dependent variables also provide evidence of divergent validity. The IIB scale correlated with the HRP scale ( $R=0.228$ ;  $p<0.01$ ), and the IWB scale correlated with the HRP scale ( $R=0.319$ ;  $p<0.01$ ). These correlations were not practically significant, indicating that the instruments measure different constructs.

Since convergent validity is a measure of variables that are related to each other (Trochim, Donnelly, & Arora, 2015), a larger correlation was expected between IIB and IWB than between the HRP scale and IIB or the HRP scale and IWB, as these two variables are theoretically similar. The correlations between IIB and the HRP scale, and between IWB and the HRP scale, may be low but are significant as HRPs may be antecedents to IIB and IWB. The collected data thus offers some evidence of the validity of the measures used.

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.935, thus indicating that a factor analysis may be useful in this study. Bartlett's test of sphericity was significant, demonstrating that

the correlation matrix is not an identity matrix and thus also suggesting appropriateness for factor analysis. The significance level smaller than 0.001 suggests that the null hypothesis must be rejected. This indicates that the strength of the relationship among the variables is robust, once again justifying the factor analysis.

Considering the exploratory factor analysis, Table 9 presents the standardised factor loading for all the items of the seven constructs of the HRP scale. All loadings below 0.3 were suppressed.

**Table 9: Factor loading for the items of the human resource practice scale**

No.	Construct/Factor						
	C&R	C&I	SS	T&D	DM	S	PA
1	-	-	-	0.813	-	-	-
2	-	-	-	0.812	-	-	-
3	-	-	-	0.796	-	-	-
4	0.754	-	-	-	-	-	-
5	0.829	-	-	-	-	-	-
6	0.759	-	-	-	-	-	-
7	0.593	0.369	-	-	-	-	-
8	0.486	0.397	-	-	-	-	0.453
9	-	-	-	-	-	-	0.739
10	-	-	0.759	-	-	-	-
11	-	-	0.841	-	-	-	-
12	-	-	0.806	-	-	-	-
13	-	-	-	-	-	0.684	-
14	-	-	-	-	-	0.697	0.379
15	-	-	-	-	-	0.697	-
16	-	-	-	-	0.653	-	-
17	-	-	-	-	0.671	-	-
18	-	-	-	-	0.764	-	-
19	-	0.705	-	-	-	-	-
20	-	0.761	-	-	-	-	-
21	-	0.726	-	-	-	-	-

Note: C&R=Compensation and rewards; C&I=Communication and information sharing; SS=Supervisor support; T&D=Training and development; DM=Diversity management; S=Staffing; PA=Performance appraisal

As can be seen from Table 9, item seven, with standardised factor loading, was observed on compensation and rewards (0.593) as well as on communication and information sharing (0.369). Item seven was designed to load on compensation and rewards primarily. Also, item eight, with standardised factor loading, was observed on compensation and rewards (0.486) as well as on

communication and information sharing (0.397), and PA (0.453). Item eight was designed to load on compensation and rewards primarily. While, item fourteen, with standardised factor loading, was observed on staffing (0.697) as well as on PA (0.379). Item fourteen was designed to load on staffing primarily.

Cross loadings occurred with item one (0.813) and training and development, item two (0.812) and training and development, and item three (0.796) and training and development, with loadings greater than 0.7. Cross loadings occurred with item four (0.754) and compensation and rewards, item five (0.829) and compensation and rewards, and item six (0.759) and compensation and rewards, with loadings greater than 0.7. Cross loadings occurred with item ten (0.759) and supervisor support, item eleven (0.841) and supervisor support, and item twelve (0.806) and supervisor support, with loadings greater than 0.7. Cross loadings occurred with item nineteen (0.705) and communication and information sharing, item twenty (0.761) and communication and information sharing, and item twenty one (0.726) and communication and information sharing, with loadings greater than 0.7. Items seven, eight and nine do not load well. The PA items are problematic, loading on different factors.

Based on the acceptable fit of the confirmatory factor model, the seven-factor model (training and development, compensation and rewards, PA, supervisor support, staffing, diversity management, and communication and information sharing) was tested. Although the perfect model fit was not achieved, with a Maximum Likelihood Chi-square of 1192.82, the degrees of freedom (*df*) being 168, and  $p < 0.001$ , as is the norm with large samples (Vandenberg, & Lance, 2000), the less stringent test revealed a satisfactory fit. The TLI of 0.963 was substantially larger than the cut-off score of 0.900 (satisfactory fit), a CFI of 0.931 was also considerably greater than the cut-off score of 0.900 (satisfactory fit), and a RMSEA of 0.044 was lower than the cut-off score of 0.050 (good fit) with a 90% confidence interval from 0.042 to 0.047. Despite the cross-loadings in the exploratory factor analysis, the confirmatory factor analysis was satisfactory. The positive results pertaining to reliability and validity justified further analyses of more complex hypotheses.

#### **4.5.3 Correlative and regression analysis**

Table 10 presents the results pertaining to the relationship between the individual HRPs and innovation.

**Table 10: Total sample correlative and regression analysis (N=3 180)**

Column 1	Column 2	Column 3	Column 4
<b>Measure of innovation</b>	<b>HRP scale (total score) and innovation</b>	<b>All subscales of the HRP scale and innovation</b>	<b>All subscales of the HRP scale and innovation (Optimal model)</b>
IIB	R=0.228; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.060; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.061; <i>p</i> <0.01; Subscales: Staffing, Training & development, Communication & information sharing, & Supervisor support
IWB	R=0.319; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.107; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.107; <i>p</i> <0.01; Subscales: Staffing, Training & development, Communication & information sharing, Compensation & rewards, & Supervisor support

In column 2, depicting the relationship between HRPs (as a composite score) and individual innovation, measured with different instruments, it can be reported that R=0.228 for IIB and R=0.319 for IWB. In both cases, the correlation coefficients were statistically significant. When considering the practical significance, R for IIB is “small” and for IWB is “medium”. Considering the coefficient of determination, 5.2% of the variance in IIB and 10.2% of the variance in IWB could be declared by HRPs. It is, therefore, practically insignificant.

The results of the regression are presented in column 3 where all the individual subscales of the HRP scale are regressed to predict individual innovation. The “Enter” option in SPSS was selected for this analysis. It can be reported that R<sup>2</sup><sub>adjusted</sub>=0.060 for IIB and R<sup>2</sup><sub>adjusted</sub>=0.107 for IWB, depicting the relationship between all subscales of the HRP scale and innovation, measured with different instruments. In both cases, the correlation coefficients were statistically significant. When considering the practical significance, R<sup>2</sup><sub>adjusted</sub> for IIB and IWB is “small”. Using all the subscales of the HRP scale allowed for 6.0% of the variance in IIB and 10.7% of the variance in IWB to be declared. Though this is still practically insignificant, it seems that the subscales are a better predictor of innovation than are the aggregate scores.

In order to identify those individual HRPs which contribute uniquely and significantly to predicting individual innovation, “Stepwise” regressions were performed using the “Stepwise” option in SPSS. From column 4, it can be read that staffing, training and development,

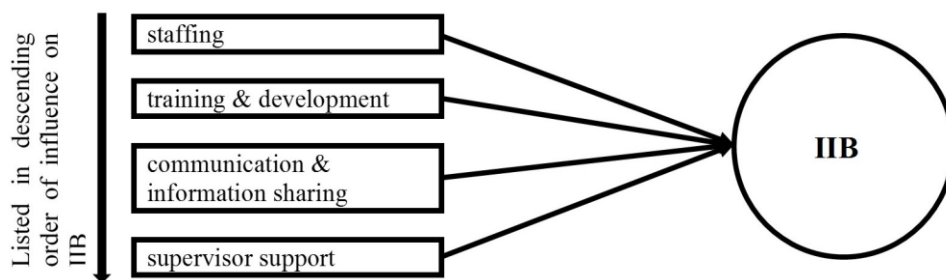
communication and information sharing, and supervisor support (listed in descending order of influence on innovation) of the HRP scale are the individual HRPs which influence IIB uniquely and significantly, while staffing, training and development, communication and information sharing, compensation and rewards, and supervisor support (listed in descending order of influence on innovation) of the HRP scale are the individual HRPs which influence IWB uniquely and significantly.

The subscales common to predicting both IIB and IWB are staffing, training and development, communication and information sharing, and supervisor support, while the subscale unique to predicting IWB is compensation and rewards. It is evident that four out of the seven subscales are common predictors of innovation, while only one of the seven is a unique predictor. Considering these important predictors, it is evident that PA and diversity management are neither common nor unique predictors of innovation.

While the importance of PA as an antecedent to innovation relative to an array of individual HRPs across employees has been established, it is, however, not clear whether the individual HRPs are an effective driver of innovation in all organisations. The following analysis intends to investigate the importance of PA as an antecedent to innovation, relative to an array of individual HRPs within specific South African organisations.

#### 4.5.3.1 Graphical representation of empirical links

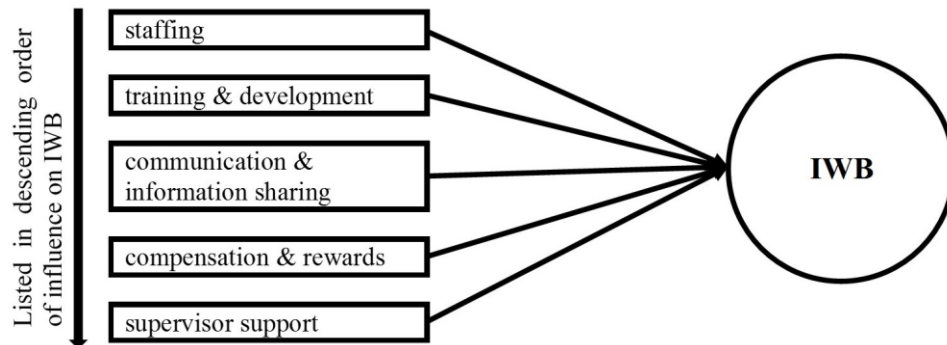
The figures below provide a graphical representation of the empirical relationships identified as part of research objective six. Figure 9 provides a model of the individual HRPs which contribute uniquely and significantly to predicting IIB.



**Figure 9: Human resource practices which contribute to individual innovative behaviour**



Figure 10 provides a model of the individual HRPs which contribute uniquely and significantly to predicting IWB.



**Figure 10: Human resource practices which contribute to innovative work behaviour**

The models presented above represent the empirical relationships of the relative effect of PA, given other HRPs, on innovation, across employees.

#### **4.6 Research objective seven: Performance appraisal, as part of human resource practices, and innovation within organisation**

To reaffirm, the seventh objective was to empirically investigate the relative magnitude of the effect of PA, given other HRPs, on innovation, within (specific) organisations.

##### **4.6.1 Reliability**

As per objective six above, reliability is adequate for each of the instruments as seen from Table 8.

##### **4.6.2 Validity**

Validity is as per objective six above.

##### **4.6.3 Correlative and regression analysis**

Table 11 presents three columns (Column 2 to Column 4) of results for the individual samples drawn from the 53 organisations. In column 2, the correlation coefficients are presented for the HRPs as a single construct and innovation. The results of the regression, where all the individual HRP subscales are regressed to predict individual innovation, are presented in column 3. Column 4 presents the results where the individual HRP subscales which contribute uniquely and significantly to predicting individual innovation are identified. As it is not viable to present data

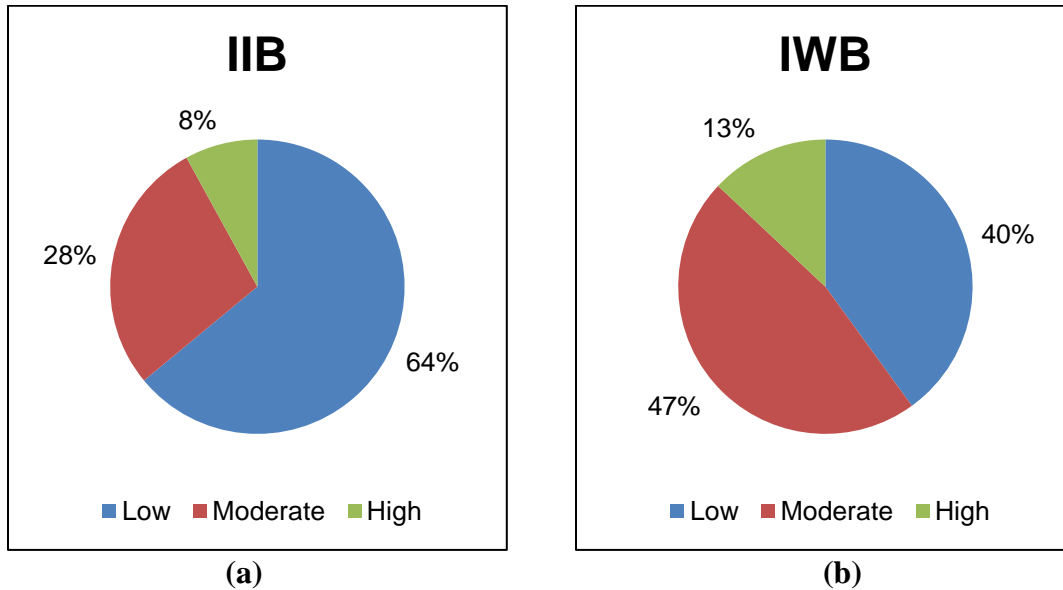
for all 53 organisations in one table, a small section is presented here. However, Table 11 is followed by a comprehensive summary of the complete table.

**Table 11: Organisation specific correlative and regression analysis (N=60 per organisation)**

Column 0	Column 1	Column 2	Column 3	Column 4
Organisation	Measure of innovation	HRP scale (total score) and innovation	All subscales of the HRP scale and innovation	All subscales of the HRP scale and innovation (Optimal model)
1	IIB	R=0.473; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.291; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.299; <i>p</i> <0.01 Subscale: Supervisor support
	IWB	R=0.214; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.141; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.136; <i>p</i> <0.01 Subscale: Supervisor support
5	IIB	R=0.171; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.073; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.050; <i>p</i> <0.01 Subscale: Staffing
	IWB	R=0.318; <i>p</i> <0.05	R <sup>2</sup> <sub>adjusted</sub> =0.040; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.077; <i>p</i> <0.01 Subscale: Staffing
51	IIB	R=0.528; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.352; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.403; <i>p</i> <0.01 Subscales: Supervisor support and Compensation & rewards
	IWB	R=0.464; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.208; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.227; <i>p</i> <0.01 Subscale: Supervisor support

In column 2, depicting the relationship between HRPs (as a composite score) and individual innovation, measured with different instruments per organisation, it can be reported that all organisations displayed statistically significant coefficients between the HRP scale and IIB, with *p*<0.01 and *p*<0.05. The average coefficient for all 53 organisations was 0.228. In total, 4/53 (8%) coefficients could be deemed as being of high practical significance (*R*>0.5), 15/53 (28%) as being of moderate practical significance (*R*>0.3) and 34/53 (64%) as being of low practical significance (*R*>0.1). Staying with column 2, but focusing now on the relationship between HRPs and IWB, it can be reported that all 53 organisations displayed statistically significant coefficients between HRPs and IWB, with *p*<0.01 and *p*<0.05. The average coefficient was 0.311. In total, 7/53 (13%)

coefficients could be deemed as being of high practical significance ( $R>0.5$ ), 25/53 (47%) as being of moderate practical significance ( $R>0.3$ ), and 21/53 (40%) as being of low practical significance ( $R>0.1$ ). The results with regard to the practical significance of the coefficients between HRPs and IIB, as well as HRP and IWB, are presented in Figure 11, below.

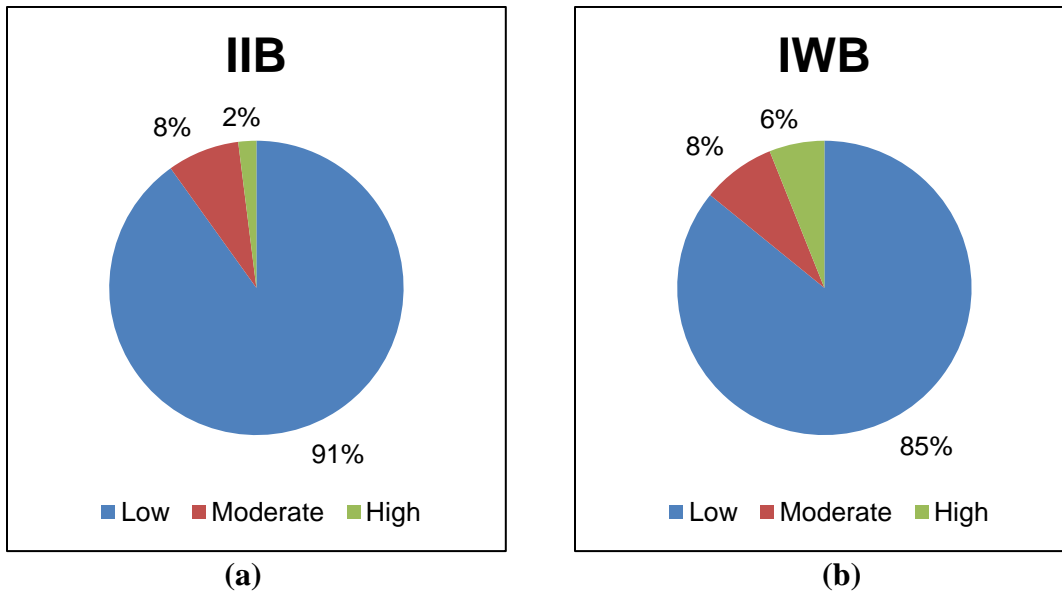


**Figure 11: Practical significance of the correlation coefficients between HRPs and innovation across organisations**

As seen in Figure 11a, in IIB there is high practical significance in a smaller proportion (8%) of the organisations when the HRP scale total scores correlated with innovation. Figure 11b also shows that, in IWB, there is high practical significance in a smaller proportion (13%) of the organisations when the HRP scale total scores correlated with innovation.

In column 3, the results of the regression are presented where all the individual subscales of the HRP scale are regressed to predict individual innovation at the organisational level. The “Enter” option in SPSS was selected for this analysis. It can be reported that all organisations displayed statistically significant coefficients between HRPs and IIB, with  $p<0.01$ . Using the regression approach yielded much lower statistically significant coefficients. The average coefficient was 0.090. In total, 1/53 (2%) of the coefficients could be deemed as being of high practical significance, 4/53 (8%) as being of moderate practical significance and 48/53 (91%) as being of low practical significance. Continuing with column 3, now concentrating on the relationship between HRPs and IWB, all organisations displayed statistically significant coefficients for IWB,

with  $p < 0.01$ . The average coefficient was 0.163. In total, 3/53 (6%) of the coefficients could be deemed as being of high practical significance, 5/53 (9%) as being of moderate practical significance and 45/53 (85%) as being of low practical significance. The results with regard to practical significance of the coefficients between HRPs and IIB, as well as HRPs and IWB are presented in Figure 12, below.



**Figure 12: Practical significance of the regression coefficients between all subscales of the HRP scale and innovation across organisations**

As reflected in Figure 12a, in IIB there is high practical significance in a smaller proportion (2%) of the organisations when all the individual subscales of the HRP scale correlate with innovation. Figure 12b shows that, in IWB, there is high practical significance in a smaller proportion (6%) of the organisations when all the individual subscales of the HRP scale correlate with innovation. The low IIB and IWB coefficients, in a majority of the organisations, suggest that other factors must drive innovation.

Comparing the results in column 2 and column 3, it seems that following the correlation approach, to calculate the coefficients between HRPs (as a single construct) and innovation yielded better results than did use of the regression approach in which all the individual subscales of the HRP scale are regressed to predict individual innovation. The relationship when using the HRPs as a single construct was larger than when using all the individual subscales of the HRP scale. This may suggest both that HRP as a single construct is a better predictor of innovation and that a

higher-level latent construct (which informs the total scores rather than the individual items) is responsible for the declared covariance.

“Stepwise” regressions – using the “Stepwise” option in SPSS – were performed in column 4 in order to identify the individual HRP subscales which contribute uniquely and significantly to predicting individual innovation at the organisational level. This analysis served to test a hypothesis on the relative importance of PA across organisations, but more specifically, to find patterns amongst PA items which predict innovation. This was important so as to gain statistics on testing hypotheses on the universalistic, contingency, and configurational perspectives of HRPs. It can be reported that all organisations displayed statistically significant coefficients between the individual HRP subscales and IIB, with  $p < 0.01$ . The average coefficient was 0.159. This higher coefficient for column 4, when compared to column 3, was expected, as only a small number of items which contributed significantly were included, and the additional items which erode the regression coefficient were excluded. In total, 1/35 (3%) of the coefficients could be deemed as being of high practical significance, 3/35 (9%) as being of moderate practical significance and 31/35 (89%) as being of low practical significance, while there is missing data for 18 organisations (organisations 2, 3, 4, 10, 12, 13, 15, 20, 28, 29, 34, 36, 39, 41, 47, 50, 52, and 53). The chains for the optimal models per organisation for IIB include 29 models with one variable, five with two variables and one with four variables. Organisation 38 had the most variables (four) in its optimal model. The most common subscale was training and development as it appears in nine of the 35 models. The next most common subscales were staffing, and diversity management as these appear in eight of the models, followed by supervisor support, and communication and information sharing which appear in five of the models, whereas compensation and rewards, and PA were the least common variables as these subscales appear in only four of the models. To detect evidence of sequences in the subscales predicting innovation, the two-variable models were analysed further. No repeating patterns were found in the two-variable models.

Still focusing on column 4, all organisations displayed statistically significant coefficients between the individual HRP subscales and IWB, with  $p < 0.01$ . The average coefficient was 0.216. In total, 2/45 (4%) of the coefficients could be deemed as being of high practical significance, 8/45 (18%) as being of moderate practical significance, and 35/45 (78%) as being of low practical significance, while there is missing data for eight organisations (organisations 4, 13, 24, 29, 39, 44, 47, and 53).

The chains for the optimal models per organisation for IWB include 35 models with one variable, eight with two variables, one with three variables and one with five variables. Organisations 38 had the most variables (five) in its optimal model. The most common subscales were supervisor support, and staffing, as these items appear in 11 of the 45 models. The next most common subscales were training and development, and PA, as these appear in 10 of the models, followed by compensation and rewards that appear in six of the models. Communication and information sharing was the least common variable as it appears in only five of the models. To detect evidence of sequences in the subscales predicting innovation, the two-variable models were analysed further. Repeating patterns occurred in 3/8 (38%) cases with two-variable models (supervisor support and diversity management).

#### **4.7 Research objective eight: Performance appraisal-innovation model with mediator and moderator variables**

To reaffirm, the eighth objective was to empirically test different models on the PA-innovation link, applying mediators such as WE and AC, and moderators such as PP, TL, and CE. This refers to the business problem where managers, human resource practitioners, and researchers alike are uninformed of the details pertaining to the conditions under which PA and innovation are linked.

##### **4.7.1 Reliability**

Also illustrated in Table 5 above, the PA instrument registers a high Cronbach alpha of 0.930. Reliability was computed for the IIB instrument, as well as the IWB instrument, which resulted in the Cronbach alphas of 0.951 and 0.893 respectively. Reliability for the PP instrument was 0.843 and, for the CE instrument, the Cronbach alpha was 0.762. Also, reliability for the TL instrument was 0.946 and, for the WE instrument was 0.900. Lastly, for the AC instrument, the Cronbach alpha was 0.806. All eight instruments have a Cronbach alpha above 0.6, which suggests that the reliability of all instruments is acceptable.

##### **4.7.2 Validity**

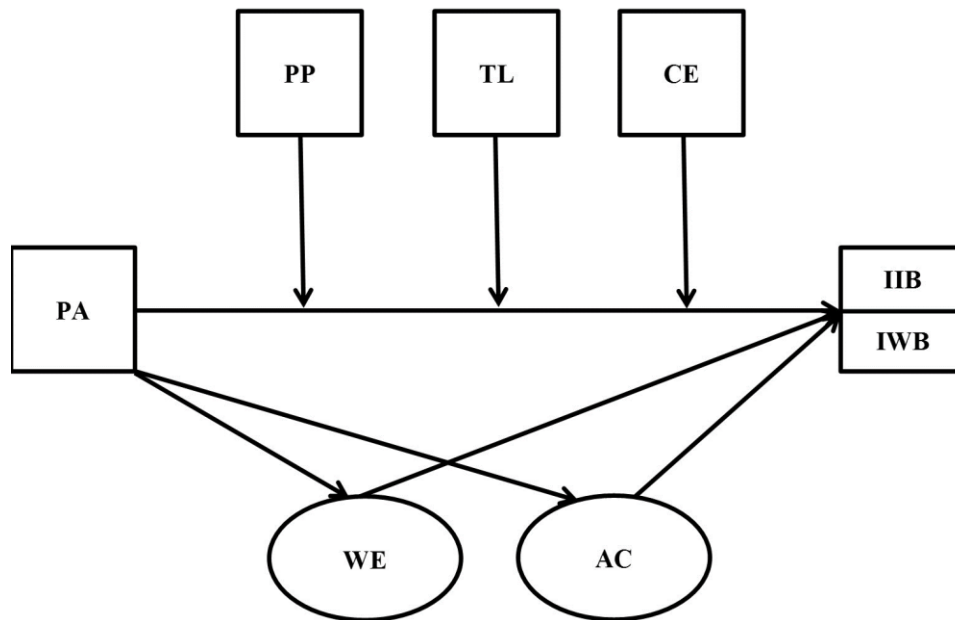
Validity is as per research objectives four and five above.

### 4.7.3 Model assessment results

The output of the mediation and moderation analysis is presented below, per hypothesis.

#### 4.7.3.1 Conceptual model

The suggested model that was assessed for objective eight is presented in Figure 13, below. PA is the independent variable, IIB and IWB are the outcome variables, PP, TL, and CE are the moderators, and WE and AC are the mediators.



**Figure 13: Performance appraisal-innovation model with mediator and moderator variables**

Six models were tested with the PROCESS macro for SPSS. PA was the independent variable in all models and two mediators (WE and AC) were included in each model. The moderators (PP, TL, and CE) were subsequently added. The dependent variable was first IIB and after that IWB. The models contained two mediators and one moderator.

#### 4.7.3.2 Hypotheses

The following are the hypotheses developed in this study to address objective eight:

- Model 1: The relationship between PA and IIB is mediated by WE and AC, and moderated by PP

- Model 2: The relationship between PA and IIB is mediated by WE and AC, and moderated by TL
- Model 3: The relationship between PA and IIB is mediated by WE and AC, and moderated by CE
- Model 4: The relationship between PA and IWB is mediated by WE and AC, and moderated by PP
- Model 5: The relationship between PA and IWB is mediated by WE and AC, and moderated by TL
- Model 6: The relationship between PA and IWB is mediated by WE and AC, and moderated by CE

Each of the hypotheses were evaluated in the PROCESS macro for SPSS to obtain the best-fit PA-innovation model.

**Model 1: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by PP**

The Baron and Kenny (1986) four stages for mediation are summarised below (supported by the Sobel test):

Step 1: The influence of the independent variable (PA) on the dependent variable (IIB) is 0.0524 ( $p < 0.0001$ ), with a 95% confidence level of 0.0256 to 0.0791. PA has a non-zero relationship with IIB.

Step 2: The influence of PA on WE is 0.2338 ( $p < 0.0001$ ), with a 95% confidence level of 0.2133 to 0.2543. The influence of PA on AC is 0.2599 ( $p < 0.0001$ ), with a 95% confidence level of 0.2401 to 0.2797. PA has a non-zero relationship with both WE and AC.

Step 3: The influence of WE on IIB controlling for PA is 0.2970 ( $p < 0.0001$ ), with a 95% confidence level of 0.2516 to 0.3425. The influence of AC on IIB controlling for PA is 0.1322 ( $p < 0.0001$ ), with a 95% confidence level of 0.0872 to 0.1771. Both WE and AC have a non-zero relationship with IIB.



Step 4: The influence of PA on IIB controlling for both WE and AC is 0.0522 ( $p < 0.0001$ ), with a 95% confidence level of 0.0254 to 0.0789 and a total mediation effect of 0.1038 (indirect effect).

Effects (WE and AC): The bootstrap estimated indirect effect of both mediators of PA on IIB is 0.1038, and the direct effect is 0.0522. The 95% bias-corrected bootstrap confidence level (5000 trials) for the indirect effect is 0.0882 to 0.1208, and since zero is not in the confidence level, it can be concluded that the indirect effect is significantly different from zero.

Summary: The direct effect from PA to IIB is 0.0524 and is statistically significant ( $p < 0.0001$ ). The indirect effect from PA to IIB is 0.1038 and is statistically significant. There is evidence of mediation of the effect of PA on IIB given that the indirect effect is statistically significant. The findings are supported by the (WE) Sobel  $z$  value of 15.6373 ( $p < 0.0001$ ), and the (AC) Sobel  $z$  value of 10.1179 ( $p < 0.0001$ ). The interaction is 0.0013 ( $p < 0.3232$ ) which denotes that PP has a weak moderation effect, and it is also not significant.

## **Model 2: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by TL**

The Baron and Kenny (1986) four stages for mediation are summarised below (supported by the Sobel test):

Step 1: The influence of PA on IIB is 0.0812 ( $p < 0.0001$ ), with a 95% confidence level of 0.0486 to 0.1138. PA has a non-zero relationship with IIB.

Step 2: The influence of PA on WE is 0.2375 ( $p < 0.0001$ ), with a 95% confidence level of 0.2169 to 0.2581. The influence of PA on AC is 0.2628 ( $p < 0.0001$ ), with a 95% confidence level of 0.2429 to 0.2828. PA has a non-zero relationship with both WE and AC.

Step 3: The influence of WE on IIB controlling for PA is 0.4487 ( $p < 0.0001$ ), with a 95% confidence level of 0.3999 to 0.4976. The influence of AC on IIB controlling for PA is 0.0868 ( $p < 0.0006$ ), with a 95% confidence level of 0.0371 to 0.1365. Both WE and AC have a non-zero relationship with IIB.

Step 4: The influence of PA on IIB controlling for both WE and AC is 0.0697 ( $p < 0.0001$ ), with a 95% confidence level of 0.0381 to 0.1014 and a total mediation effect of 0.1294 (indirect effect).

Effects (WE and AC): The bootstrap estimated indirect effect of both mediators of PA on IIB is 0.1294, and the direct effect is 0.0697. The 95% bias-corrected bootstrap confidence level (5000 trials) for the indirect effect is 0.1111 to 0.1493, and since zero is not in the confidence level, it can be concluded that the indirect effect is significantly different from zero.

Summary: The direct effect from PA to IIB is 0.0812 and is statistically significant ( $p < 0.0001$ ). The indirect effect from PA to IIB is 0.1294 and is statistically significant. There is evidence of mediation of the effect of PA on IIB given that the indirect effect is statistically significant. The findings are supported by the (WE) Sobel  $z$  value of 15.6373 ( $p < 0.0001$ ), and the (AC) Sobel  $z$  value of 10.1179 ( $p < 0.0001$ ). The interaction is 0.0816 ( $p < 0.0001$ ) which denotes that TL has a strong moderation effect, and it is also significant.

### **Model 3: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by CE**

The Baron and Kenny (1986) four stages for mediation are summarised below (supported by the Sobel test):

Step 1: The influence of PA on IIB is 0.0596 ( $p < 0.0001$ ), with a 95% confidence level of 0.0301 to 0.0891. PA has a non-zero relationship with IIB.

Step 2: The influence of PA on WE is 0.2338 ( $p < 0.0001$ ), with a 95% confidence level of 0.2133 to 0.2543. The influence of PA on AC is 0.2599 ( $p < 0.0001$ ), with a 95% confidence level of 0.2401 to 0.2797. PA has a non-zero relationship with both WE and AC.

Step 3: The influence of WE on IIB controlling for PA is 0.4371 ( $p < 0.0001$ ), with a 95% confidence level of 0.3884 to 0.4857. The influence of AC on IIB controlling for PA is 0.0715 ( $p < 0.0040$ ), with a 95% confidence level of 0.0228 to 0.1202. Both WE and AC have a non-zero relationship with IIB.

Step 4: The influence of PA on IIB controlling for both WE and AC is 0.0579 ( $p < 0.0001$ ), with a 95% confidence level of 0.0284 to 0.0874 and a total mediation effect of 0.1208 (indirect effect).

Effects (WE and AC): The bootstrap estimated indirect effect of both mediators of PA on IIB is 0.1208, and the direct effect is 0.0579. The 95% bias-corrected bootstrap confidence level (5000

trials) for the indirect effect is 0.1026 to 0.1404, and since zero is not in the confidence level, it can be concluded that the indirect effect is significantly different from zero.

Summary: The direct effect from PA to IIB is 0.0596 and is statistically significant ( $p < 0.0001$ ). The indirect effect from PA to IIB is 0.1208 and is statistically significant. There is evidence of mediation of the effect of PA on IIB given that the indirect effect is statistically significant. The findings are supported by the (WE) Sobel  $z$  value of 15.6373 ( $p < 0.0001$ ), and the (AC) Sobel  $z$  value of 10.1179 ( $p < 0.0001$ ). The interaction is 0.0098 ( $p < 0.0001$ ) which denotes that CE has a weak moderation effect, and it is also significant.

**Model 4: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by PP**

The Baron and Kenny (1986) four stages for mediation are summarised below (supported by the Sobel test):

Step 1: The influence of PA on IWB is 0.0052 ( $p < 0.6008$ ), with a 95% confidence level of -0.0142 to 0.0246.

Summary: The model did not pass step 1 of the Baron and Kenny (1986) four-step assessment as the cut-off point was taken as  $p < 0.01$ .

**Model 5: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by TL**

The Baron and Kenny (1986) four stages for mediation are summarised below (supported by the Sobel test):

Step 1: The influence of PA on IWB is 0.0265 ( $p < 0.0258$ ), with a 95% confidence level of 0.0032 to 0.0499.

Summary: The model did not pass step 1 of the Baron and Kenny (1986) four-step assessment as the cut-off point was taken as  $p < 0.01$ .

**Model 6: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by CE**

The Baron and Kenny (1986) four stages for mediation are summarised below (supported by the Sobel test):

Step 1: The influence of PA on IWB is 0.0095 ( $p < 0.3788$ ), with a 95% confidence level of -0.0117 to 0.0308.

Summary: The model did not pass step 1 of the Baron and Kenny (1986) four-step assessment as the cut-off point was taken as  $p < 0.01$ .

The overall results of the model assessment are summarised in Table 12, below.

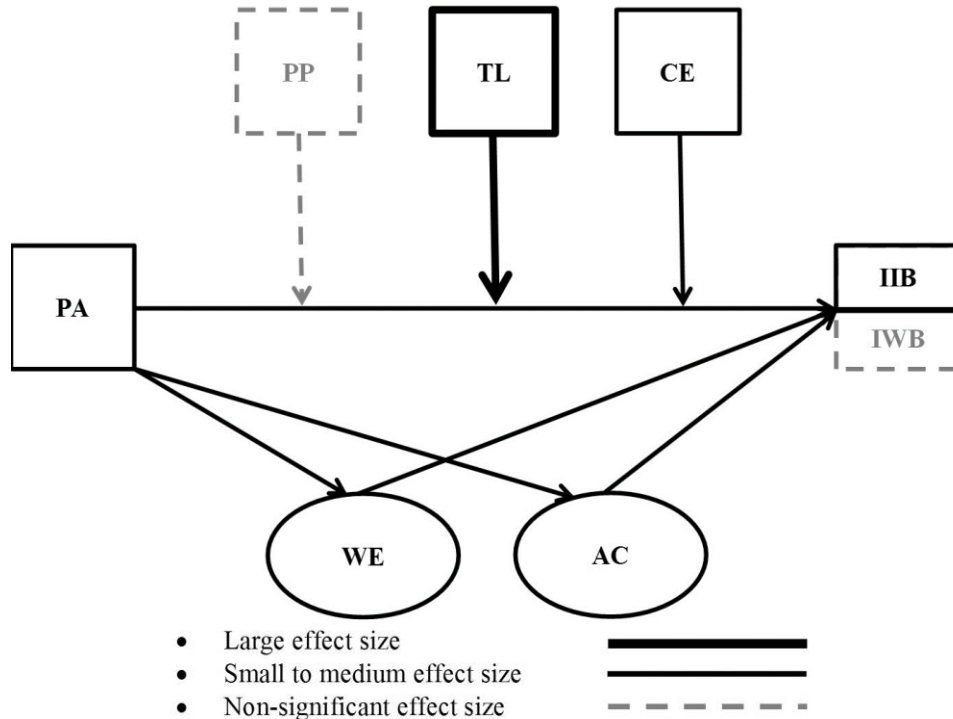
**Table 12: Summary of the hypothesised results**

<b>Hypothesis</b>	<b>Results</b>
Model 1: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by PP	Partially rejected. Main effect: Mediation; No moderation.
Model 2: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by TL	Fully accepted. Main effect: Mediation; Moderation.
Model 3: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by CE	Fully accepted. Main effect: Mediation; Moderation.
Model 4: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by PP	Fully rejected. The PA-IWB relationship was not significant.
Model 5: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by TL	Fully rejected. The PA-IWB relationship was not significant.
Model 6: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by CE	Fully rejected. The PA-IWB relationship was not significant.

As can be seen from Table 12 above, some of the hypotheses related to IIB were accepted whereas all the hypotheses related to IWB were rejected. The strongest model was Model 2, providing the best evidence of the relationship between the selected variables. TL and WE are thus the primary concerns in an optimal PA-innovation model.

### 4.7.3.3 Graphical representation of empirical links

Figure 14 provides a graphical representation of the revised model on the PA-innovation link as part of this research objective.



**Figure 14: Revised performance appraisal-innovation model with mediators and moderators**

In Figure 14, PP and IWB are the grey dotted parts of the model, as these stated models did not materialise.

## 4.8 Summary of the chapter

The research analysed the PA-innovation link through a series of consecutive and more complex tests, thus achieving the goal of this chapter. Note that this chapter not only presented the results of the research but also an operational discussion of each of the statistics related to each objective.

The fifth chapter concludes the study with a higher level discussion and integration of the results and notes the practical and theoretical implications of the study, along with limitations of the study and future research considerations.

## **CHAPTER 5: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS**

In this chapter, the research is concluded with a discussion on the findings as well as the implications in theory and practice. Additionally, the limitations and suggestions for future research are discussed. The empirical investigations that were performed as part of this study is presented per objective, below.

In this study, two measures of individual innovation in the workplace were assessed, specifically IIB and IWB. These two measures are similar with regard to the concepts they measure. The rating scales are also similar. However, IWB consists of only ten items with a reliability of 0.893, while IIB consists of 14 items with a reliability of 0.951. Despite the high inter-correlation of 0.683 ( $p < 0.01$ ), these differences still occur.

### **5.1 Research objectives one, two and three: Literature review discussion**

The first literature review objective was to critically review the present body of knowledge pertaining to the link between PA and innovation. Critically reviewing and synthesising the present body of knowledge pertaining to the PA-innovation relationship in an effort to expose an important deficiency in the literature provided a foundation for this study, and insight into the available literature.

Research objective two was to report on the magnitude of the effect of PA on innovation based on a review of the literature. None of the research papers explicitly studied the relationship between PA and innovation from a quantitative perspective. Conclusive evidence of the importance of PA is not available, nor is evidence of which elements of PA are important in relation to innovation. The direct link between PA and individual innovation is an under-researched topic. This specifies a clear gap in the available body of knowledge.

The third and final literature research objective was to report on the relative magnitude of the effect of PA, given other HRP, on innovation based on a review of the literature. Thirteen of the research papers explicitly studied the relationship between HRP and innovation from a quantitative perspective. Conclusive evidence of the importance of HRP in relation to innovation is available. However, limited research is available on the relationship between the individual HRP and individual innovation. This indicates a further gap in the current literature.

All three of the literature research objectives exposed a serious gap in the present literature related to the PA-innovation relationship. Neither the magnitude of the relationship nor nature thereof, given other competing variables, are specified. As stated before, much of the PA-innovation literature is conducted within the Western context, focusing on a single-company, single-industry or a sample of organisations pooled together as a single unit, with relatively small samples. The majority of the research on the PA-innovation relationship has been criticised for focusing only on PA as a free-standing construct, and not integrating it with other possible antecedents, and not having consensus on the specific practices which drive innovation. However, many simple models are available to explain the PA-innovation relationship; complex models are limited. The academic field is thus ill-equipped to inform business on the importance of PA should the aim be to enhance innovation, an outcome necessary to sustain organisational performance.

## **5.2 Research objective four: Performance appraisal and innovation**

In full, the fourth objective was to empirically investigate the magnitude of the effect of PA, and its individual items, relative to other organisational variables, on innovation, across employees (in general).

### **5.2.1 Discussion**

Following from the literature review, it is clear that the PA-innovation link focuses mostly on Western samples. The sample presented in this study addresses this concern and the research addresses the aim of the study within the South African context. Furthermore, the respondents represented the South African workforce well, in as far as gender, race, and age were concerned. In addition, the biographical data was closely aligned with information presented in the Quarterly Labour Force Survey publication (Statistics South Africa, 2016).

Previous investigations on the PA-innovation relationship have also been criticised for focusing only on a single-company or a single-industry with relatively small samples. This research makes use of a large sample, across multiple organisations in different sectors. The study empirically investigated 3 180 employees drawn from 53 companies within the private sector, parastatals, and government departments.

Previous research on the PA-innovation link has also been criticised for focusing only on PA as a free-standing construct, and not integrating it with other possible antecedents. This study addresses this issue by also including several other measures, namely leadership style, PP, and entrepreneurial climate, in the model.

The results showed that the relationship between PA (as a total score) and individual innovation, although statistically significant, was practically insignificant. The relationship between all items of PA and innovation was also statistically significant and practically insignificant. The relationship when using all items, however, was larger than when using the total score. This may suggest that the items are better predictors of innovation.

It is also clear that considering PA as a universal predictor of innovation across organisations does not lend support for PA as one of the antecedents to innovation. This is inconsistent with the research conducted by Aktharsha and Sengottuvel (2016), Choi, Moon, and Ko (2013), Dalota and Perju (2010) and Runfeng (2011). The PA-innovation relationship may be found in single organisations, rather than across organisations.

Focusing on the individual PA items, the results showed that some were more effective in predicting innovation than others. These items had a common theme - that of a clear link with organisational performance and communication or negotiation between management and the employee. For these themes, it may be deduced that these elements of PA are the primary drivers of innovation. Therefore, performance targets that are set and recorded on the PA system have the strongest influence on IIB, while managers who negotiate each of their team members' specific, measurable and stretching performance targets are the largest driver of IWB.

The variables, PP, CE, PA, and TL (listed in descending order of influence on innovation) influence IIB, while PP, PA, CE, and TL (listed in descending order of influence on innovation) influence IWB. In the case of IIB, PA was the third most important predictor and, in the case of IWB, the second most important predictor. It can be seen that PA, amongst other variables, is responsible for innovation – a conclusion that aligns with the findings of research by Bal, Bozkurt and Ertemsir (2014), Jimenez-Jimenez and Sanz-Valle (2005), Mark and Akhtar (2003) and Shipton, West, Dawson, Birdi and Patterson (2006). The results also demonstrate that PA is a far more important driver of innovation than, for example, TL is. PP has the most significant influence



on IIB and IWB compared to the other variables. This places PA as an antecedent to innovation within the context of other variables.

### **5.2.2 Theoretical implications**

The research contributes to academic literature and theory on PA and innovation within the South African context, where no previous study of this nature has been conducted. This research has led to an increase in knowledge and discovery on the PA-innovation link. The research demonstrates that PA is a driver of innovation, but that it accounts for less than 10% of the variance in innovation. The aspects of PA which drive innovation have been specified. Furthermore, the importance of PA overall - as well as the relative importance of PA as an antecedent to innovation in the workplace - has been established. It has also been established that there are other variables that have a far more significant influence on innovation than PA does.

### **5.2.3 Practical implications**

The outcomes or results of the study have the potential to benefit all business stakeholders and may also assist managers and human resource practitioners to identify which PA practices enhance innovation. Moreover, the identified practices will allow human resource practitioners and managers to enrich their current PA processes in an effort to enhance innovation. In addition, the magnitude of the relationship has been quantified, and human resource practitioners are alerted to the relative role of PA as a predictor of innovation. Although the study has provided evidence that PA has a role to play in influencing innovation within an organisation, it is clear that PP is central to innovation, and that TL plays a subordinate role. Focusing on the recruitment of proactive employees, rather than on managing them with TL practices, may be at the root of innovation in organisations. This knowledge would help managers improve innovation behaviour and thereby increase competitive advantage.

## **5.3 Research objective five: Performance appraisal and innovation within organisations**

In full, the fifth objective was to empirically investigate the magnitude of the effect of PA, and its individual items, relative to other organisational variables, on innovation, within (specific) organisations.

### 5.3.1 Discussion

Earlier research on the PA and innovation relationship has been criticised for concentrating on samples of organisations pooled together as a single unit, or on single-organisation samples, implying generalisability across organisations. This study addresses that gap and reports on the PA-innovation link across different organisations. The study involved empirically investigating the PA-innovation link in each of the 53 organisations.

The results showed that the magnitude of the correlations between PA and IIB varied from 0.495 to 0.002, whereas the correlations between PA and IWB varied from 0.570 to 0.002. Considering the finding regarding the correlation between PA (as a composite score) and individual innovation, it can be concluded that a practically significant link was established in 26% of the organisations for IIB, and 32% of the organisations for IWB. A statistically significant link was found in all organisations. In both, IIB and IWB there is low practical significance in a larger proportion of the organisations (approximately 75% of the cases). The research conducted by Bal, Bozkurt, and Ertemsir (2014), and Shipton, West, Dawson, Birdi, and Patterson (2006) indicates that there is a significant and positive relationship between PA and innovation.

The magnitude of the regression coefficients between PA and IIB varied from 0.873 to 0.001, whereas the regression coefficients between PA and IWB varied from 0.815 to 0.013. Considering the finding in which all the individual PA items were regressed to predict individual innovation, it can be concluded that a practically significant link was established in 28% of the organisations for IIB and 30% of the organisations for IWB. However, a statistically significant link was found in all the organisations. In a larger proportion of the organisations (approximately 45% of the cases), there is low practical significance in both, IIB and IWB. Focusing on the individual PA items at the organisational level, some were more effective in predicting innovation than others. It can be noted that five (PA1, PA2, PA8, PA9, and PA17) out of the 18 items are common predictors of IIB and only one (PA13) is a common predictor of IWB. These elements of PA are the primary drivers of innovation. Therefore, should the PA system be the primary mechanism used to drive innovation in an organisation, the focus should be placed on these abovementioned aspects. From the items predicting IIB, this implies that the PA system should be the primary mechanism used to assess the performance of employees (PA1), that formal training on the PA system (PA2) is

provided, that the PA system is not biased (PA8), that the PA system is easy to administer (PA9) and that continuous assessment of performance is being carried out regularly and recorded (PA17) and if the PA system has to influence innovation. From the PA data related to IWB, managers who negotiate each of their team member's specific, measurable and stretching performance targets (PA13) are the largest driver of innovation. However, these patterns are random.

It seems that the use of the regression approach yielded better results than did use of the correlation approach. The link was larger when using PA as a total score. This is inconsistent with the research conducted by Jimenez-Jimenez and Sanz-Valle (2005) and suggests that groups of items are better predictors of innovation than are the total scores, suggesting that a latent construct, rather than the total scores, is responsible for the declared variance. However, the seeming randomness of the items which predicted innovation tends to refute such claims, though it was beyond the scope of this study to investigate this matter further. It may be deduced that, to some extent, certain elements of PA universally predict innovation, though in some organisations more than others.

Considering the finding regarding the importance of PA compared to other organisational variables, it can be concluded that PA was a unique and significant predictor in eight of the 53 organisations for IIB, as well as for IWB, but PA was the dominant antecedent in two of the 53 organisations for IIB, as well as for IWB. The results show that PA is the least important driver of innovation in comparison with the other variables, while PP has the most significant influence (approximately 90% in each case) on IIB and IWB within the organisations. Although PA has a less important role to play in influencing innovation within an organisation, it is evident that PP, CE, and TL play a much larger role in driving innovation at the organisational level. This places the importance of PA in perspective, but also shows greater support for the universalistic perspective, as PA seems to be outperformed by the control variables consistently.

Evidence supportive of the universalistic perspective was not present in the correlation coefficients that were reported for PA as a single construct and innovation behaviour per organisation. No consistency was found across organisations. The results of the regression analysis, where all the individual PA items are regressed to predict individual innovation, also do not support the universalistic perspective. The results were inconsistent, and there were large variations between organisations.

The support for the configurational perspective was limited, and no conclusive evidence of this was found as no specific sequences apply to all 53 organisations. The results of the regression, where all the individual PA items are regressed to predict individual innovation, show that there is partial support for the configurational perspective, as repeating patterns occur in 15% of the cases in IIB and 12% of the cases in IWB. This percentage is low and configurational fit could not, therefore, be fully accepted as it is not applicable to all organisations. In the results of the regression, where PA and the control variables were regressed to predict innovation, some support for the configurational perspective was found as repeating patterns occur in all cases of the two-variable models for IIB and IWB.

As stated earlier, no test for the contingency fit was performed as data on the strategic positions of the different organisations were not collected in order to perform an analysis.

### **5.3.2 Theoretical implications**

The study contributes to scholarly literature and theory on PA and innovation within the South African setting, where prior research of this nature has not been carried out. Of more (and global) importance may be that this investigation has led to an increase in knowledge and discovery of the PA and innovation relationship across organisations. The analysis shows that PA is a driver of innovation at the organisational level, but only in some organisations. A practically significant PA and innovation relationship was established in approximately 30% of the organisations. The items of the PA measure, or aspects of PA which drive innovation, have been specified only partially and tentatively. These were, however, found in only some organisations. To complicate matters further, it was found that the individual items of the PA measure predict innovation better than the composite score does. This warrants further research on the psychometric properties of the PA measure, especially exploratory factor analysis. Furthermore, the importance of PA overall as well as its importance as an antecedent to innovation in the workplace has been established. It has further been established that there are other variables that have a more substantial influence on innovation than PA does at the organisational level. This type of analysis was not found in the literature consulted when drafting this document and this positioning of PA amongst other antecedents is a valuable contribution to the body of knowledge. Considering the applicability of the human resource models (universalistic, contingent, or configurational perspective), it can be

reported that there is no support for the universalistic perspective as no uniformity was found across organisations. However, there is some support for the configurational perspective as repeating patterns were found in the two-variable models, but the configurational fit could not be wholly accepted as no explicit patterns apply to all 53 organisations.

### **5.3.3 Practical implications**

The results of this research are expected to be of significance to all stakeholders and may perhaps aid human resource professionals and supervisors. Focusing interventions on the identified aspects will permit supervisors and human resource specialists to enhance their PA methods further, aligning them to improve innovation at the organisational level. This, however, comes with a warning as, although there is some commonality, it does not apply universally. Additionally, the magnitude of the PA-innovation link has been quantified. The overlaps differ in their range (large variation between the coefficients); in some organisations, PA is a practically significant driver of innovation, and in others not. The uncertainty may be due to PA not being employed as a tool for the purposes of determining performance bonuses in South Africa. No specific PA practices drive innovation universally, and it is thus difficult for practitioners to know where, specifically, to focus. The attention of human resource practitioners is drawn to the relative role of PA as a predictor of innovation within organisations, relative to other antecedents. Even though the research has confirmed that PA has a role to play in influencing innovation within an organisation, it is apparent that PP, CE, and TL have a much more significant role in driving innovation at the organisational level. The effect of PA is small, compared to the other organisational variables. Thus the focus should be on these other variables. It can, therefore, be recommended that human resource practitioners should concentrate on the employment of proactive employees, rather than on managing them with PA practices and that this shift in emphasis may be at the source of innovation in organisations. This information would enable supervisors and managers to improve innovation behaviour and enhance competitive advantage accordingly.

### **5.4 Research objective six: Performance appraisal, as part of human resource practices, and innovation**

In full, the sixth objective was to empirically investigate the relative magnitude of the effect of PA, given other HRPs, on innovation, across employees (in general).

### **5.4.1 Discussion**

The current literature has been criticised for not having agreement on the specific practices which drive innovation. Also, as stated before, much of the HRPs-innovation research is conducted primarily within the Western context. This study addresses the matter of clarity on specific drivers of innovation as well as contextualising the research within the South African context.

The majority of the research has been limited to examining HRPs as a single concept rather than as individual practices in their own right. This study has attempted to include several other HRPs in the model, and the focus in this research has been on the individual practices.

The results revealed that the relationship between HRPs (as a composite score) and individual innovation, although statistically significant, was practically insignificant. The relationship between all the individual subscales of the HRP scale and innovation was also statistically significant but practically insignificant. It seems that the subscales are a better predictor of innovation than the aggregate scores are.

Focusing on the individual HRPs, some were more effective in predicting innovation than others. The subscales common to predicting both IIB and IWB are staffing, training and development, communication and information sharing, and supervisor support. The subscale unique to predicting IWB, on the other hand, is compensation and rewards. It is evident that four out of the seven subscales are common predictors of innovation, while only one of the seven is a unique predictor. Considering these important predictors, it is evident that PA and diversity management are neither common nor unique predictors of innovation. This is not consistent with the research conducted by Dalota and Perju (2010), Jimenez-Jimenez and Sanz-Valle (2005), and Laursen and Foss (2003), who present evidence that specific HRPs, such as PA, result in innovation.

### **5.4.2 Theoretical implications**

This study contributes to academic literature and theory on HRPs and innovation within South Africa. This study has led to an increase in knowledge and discovery of the HRPs and innovation relationship across employees. The research reveals that HRPs are a driver of innovation, but that it accounts for approximately 15% of the variance in innovation when considering the sample of employees. The subscales of the HRP scale which drive innovation have been specified.

Furthermore, the importance and relative importance of PA as an antecedent to innovation in the workplace have been established. It has also been established that there are other HRPs that have a far more significant influence on innovation than PA does.

### **5.4.3 Practical implications**

The outcomes of the study are likely to benefit all interested parties and may also support managers and human resource practitioners in focusing on the specific HRPs which significantly enhance innovation. Furthermore, these identified practices will enable human resource practitioners and managers to enhance their current human resource systems in an effort to enhance innovation. In addition, the magnitude of the relationship has been quantified and the attention of human resource practitioners is drawn to the relative role of HRPs as predictors of innovation within organisations. Considering these important predictors, it is apparent that PA and diversity management are neither common nor unique predictors of innovation.

## **5.5 Research objective seven: Performance appraisal, as part of human resource practices, and innovation within organisation**

In full, the seventh objective was to empirically investigate the relative magnitude of the effect of PA, given other HRPs, on innovation, within (specific) organisations.

### **5.5.1 Discussion**

As stated before, the majority of the research has been limited to examining HRPs as a single concept rather than as individual practices in their own right. However, this objective included several other HRPs in the model and the focus in this research was on the individual practices at the organisational level.

The magnitude of the correlations between PA and IIB varied from 0.538 to 0.008, whereas the correlations between PA and IWB varied from 0.647 to 0.084. Considering the finding regarding the correlation between HRPs (as a composite score) and individual innovation within organisations, it can be concluded that a practically significant link was established in 36% of the organisations for IIB, and 60% of the organisations for IWB. A statistically significant link was found in all organisations. In IIB there is low practical significance in a larger proportion of the

organisations (64% of the cases). In IWB, meanwhile, there is low practical significance in 47% of the cases.

The magnitude of the regression coefficients between PA and IIB varied from 0.501 to 0.006, whereas the regression coefficients between PA and IWB varied from 0.649 to 0.004. Considering the finding in which all the individual HRP subscales were regressed to predict individual innovation within organisations, it can be concluded that a practically significant link was established in 10% of the organisations for IIB and 14% of the organisations for IWB. However, a statistically significant link was found in all the organisations. In a larger proportion of the organisations (approximately 90% of the cases), there is low practical significance in both, IIB and IWB. The low IIB and IWB coefficients, in a majority of the organisations, suggest that other factors must drive innovation. Focusing on the individual HRP subscales at the organisational level, some were more effective in predicting innovation than others. It is evident that one (training and development) out of the seven subscales is a common predictor of IIB and that two (supervisor support, and staffing) are common predictors of IWB. These elements of the HRP scale are the primary drivers of innovation. Therefore, should HRPs be the primary mechanism used to drive innovation in an organisation, the focus should be placed on these abovementioned aspects.

Considering the finding regarding the importance of PA compared to other HRPs, it can be concluded that PA was a unique and significant predictor in four of the 53 organisations for IIB, and in 10 of the organisations for IWB. However, PA was the dominant antecedent in three of the 53 organisations for IIB, and in eight of the organisations for IWB. The results show that PA is the least important driver of innovation in comparison with the other HRPs, while training and development has the most significant influence on IIB within the organisations. The results also show that PA is the second most important driver of innovation in comparison with the other HRPs, while supervisor support and staffing have the most significant influence on IWB within the organisations. Although PA has a less important role to play in influencing innovation within an organisation, it is evident that training and development, supervisor support, and staffing play a much larger role in driving innovation at the organisational level. This places the relative importance of PA amongst other HRPs in perspective.



It seems that the use of the correlation approach yielded better results than did use of the regression approach. The relationship was larger when using HRPs as a total score, which is in line with research conducted by Jimenez-Jimenez and Sanz-Valle (2005) and suggests that HRP as a total score is a better predictor of innovation, and also that the total scores, rather than a latent construct, are responsible for the declared variance.

Support for the universalistic perspective was lacking from the correlation coefficients that were reported for HRP as a single construct and innovation behaviour per organisation. No consistency was found within organisations. The results of the regression analysis, where all the individual HRP subscales are regressed to predict individual innovation, also do not support the universalistic perspective. The results were inconsistent, and there were large variations between organisations.

Evidence supportive of the configurational perspective was limited, and no conclusive evidence of this was found as no specific sequences apply to all 53 organisations. The results of the regression, where all the individual HRP subscales are regressed to predict individual innovation, show that there is partial support for the configurational perspective, as repeating patterns occur in 38% of the cases in IWB. This percentage is low and applicable only in the case of IWB. Configurational fit could not, therefore, be fully accepted as it is not applicable to all organisations.

As stated earlier, no test for the contingency fit was performed as data on the strategic positions of the different organisations were not collected in order to perform an analysis.

### **5.5.2 Theoretical implications**

This study contributes to academic literature and theory on HRPs and innovation within South Africa. The study has led to an increase in knowledge and discovery of the HRPs and innovation relationship within organisations. Focusing on the HRPs-innovation link within organisations, the research demonstrates that PA is a driver of innovation at the organisational level, but only in some organisations. A high practically significant HRPs-innovation link was established in 8% of the organisations for IIB, and 13% of the organisations for IWB. The subscales of the HRP scale which drive innovation have been specified. These were, however, found in only some organisations. To complicate matters further, it was found that the composite score of HRPs predicts innovation better than the individual subscales of the HRP scale does. This warrants further research on the

psychometric properties of the HRP scale. Moreover, the absolute importance of PA and other HRPs, as well as its importance as an antecedent to innovation in the workplace, has been established. It has also been established that there are other HRPs that have a far more significant influence on innovation than PA does at the organisational level. This positioning of PA amongst other HRPs is a valuable contribution to the body of knowledge. Considering the applicability of the human resource models (universalistic, contingent, or configurational perspective), it can be reported that there is no support for the universalistic perspective as no uniformity was found within organisations. However, there is some support for the configurational perspective as repeating patterns were found in the two-variable models, but the configurational fit could not be fully accepted as no explicit patterns apply to all 53 organisations.

### **5.5.3 Practical implications**

The outcome of the study is likely to benefit all interested parties. Focusing interventions on the identified aspects will enable managers and human resource practitioners to improve their existing human resource systems significantly, aligning them to enhance innovation at the organisational level. This, however, comes with a warning as, although there is some commonality, it does not apply universally. Additionally, the magnitude of the HRPs and innovation relationship has been quantified across organisations. Again, this differed widely across organisations as there are large variations between the coefficients. In very few organisations, PA is a practically significant driver of innovation. The attention of human resource professionals is drawn to the relative role of PA as a predictor of innovation within organisations, relative to other HRPs.

Although this study has confirmed that PA has a part to play in influencing innovation within an organisation, it is evident that training and development, supervisor support, and staffing have a much greater role in driving innovation at the organisational level. It can, therefore, be recommended that human resource professionals should focus on training and development, supervisor support, and staffing, as opposed to PA or the other HRPs, and that this shift in emphasis might be at the basis of innovation in organisations. This data would allow managers to enhance innovation behaviour and increase competitive advantage accordingly.

## **5.6 Research objective eight: Performance appraisal-innovation model with mediator and moderator variables**

In full, the eighth objective is to empirically test different models on the PA-innovation link, applying mediators such as WE and AC, and moderators such as PP, TL, and CE.

### **5.6.1 Discussion**

Although many models on the PA-innovation link are available, complex models are limited. Some of these complex models were tested in this study. The South African context may be unique, given the legislative framework within which PA is administered. Evidence of empirical research testing different complex models on the PA-innovation relationship is seemingly lacking, particularly so within the South African environment. This study provided clarity on the specific PA-innovation models applicable within the South African context.

In the present study, eight variables were included in the model, namely PA, IIB, IWB, PP, TL, CE, WE, and AC. The results reveal that PA directly influences IIB, but not IWB. The PA-IIB relationship is mediated by WE as well as AC, with WE having the greatest effect. TL and CE moderate the PA-IIB relationship, with TL having the strongest effect and CE having almost no effect. This is consistent with the research conducted by Al-Husseini and Elbeltagi (2012), Hu, Gu and Chen (2012), Khan, Aslam and Riaz (2012), Mumford, Scott, Gaddis and Strange (2002), Oke, Munshi and Walumbwa (2009), Paulsen, Callan, Ayoko and Saunders (2013), Sethibe and Steyn (2016), and Tipu, Ryan and Fantasy (2012). Several empirical studies provide evidence that there is a strong connection amongst innovation and climate (Björkdahl, & Börjesson, 2011; Lin, & Liu, 2012; Michaelis, Stegmaier, & Sonntag, 2010; Shanker, Bhunugopan, & Fish, 2012; Zhang, & Begley, 2011), which is not aligned with the findings in this study. PP does not moderate the PA-IIB relationship, which is inconsistent with the findings of studies by Seibert, Kraimer and Crant (2001), Tai and Mai (2016), Trost, Skerlavaj and Anzengruber (2016), and Zhang, Li and Yu, (2014). The results showed an enhancing effect, as PA and TL increased, IIB increased. None of the models for IWB passed step 1 of the Baron and Kenny (1986) four-step assessment. These models or hypotheses were therefore rejected.

In Figure 14, IWB is not present, as the stated models did not materialise. Application of the present statistical analytical tools revealed that PA directly influences IIB. However, it does not directly influence IWB. These two measures (IIB and IWB) are similar with regards to the concepts they measure. The rating scales are also similar. However, the more complex analyses revealed different outcomes. Conceptually (IIB and IWB) the two measures of individual innovation in the workplace, may measure different constructs. This should be a matter of interest for future researchers.

The study shows the importance of including WE, AC and especially TL when investigating the relationships between PA and IIB. The results indicate the importance of using PA to enhance IIB. According to Agarwal (2014), and Agarwal, Datta, Blake-Beard and Bhargava (2012), WE correlates positively with IWB, and also mediates the relationship between leader-member exchange and IWB. These researchers' findings are not consistent with the findings in this study. In a study by Jafri (2010), AC is positively related to innovative behaviour which is partially aligned with the findings in this study, specifically in the case of IIB.

It is evident that TL has a much bigger part to play in enhancing innovation. Managing employees with TL practices and instilling WE may be at the root of innovation in organisations. According to the literature, PP is theorised to be the basis of innovative behaviour (Fuller, & Marler, 2009; Parker, Williams, & Turner, 2006; Seibert, Kraimer, & Crant, 2001; Thomas, Whitman, & Viswesvaran, 2010), which is inconsistent with the findings of this study. The revised model makes a significant contribution to understanding the PA-innovation link. It is interesting to note that the findings in South Africa in some regards are quite similar to those found in the Western context, and in other cases quite different.

### **5.6.2 Theoretical implications**

The relationship between PA and innovation and the various variables included in the model was justified through general systems theory as well as the input-transformation-output model. Not all variables were found to contribute equally to innovation, and the nature of the contribution was specified. The research thus contributes to academic literature and theory on the PA-innovation link within the South African context, where no prior studies of this nature, complexity, and using this method has been conducted in one report. This study has led to an increase in knowledge and

the unveiling of optimal models on the PA and innovation relationship. A valuable contribution to the body of knowledge was made as a best-fit PA-innovation model has been specified. Applying a specific set of mediator and moderator variables to enhance innovation is evident.

### **5.6.3 Practical implications**

The outcomes of this study are expected to be of value to all stakeholders and may perhaps assist human resources practitioners and managers to appropriately assign resources to particular organisational variables, thereby enhancing innovation within organisations. It is evident that TL has a much larger role to play in enhancing innovation than do PP or CE. Managing employees with TL practices and instilling WE may be at the root of innovation in organisations. However, managers should focus on managing employees with TL practices, to effectively drive innovation within the organisation as TL has the largest positive impact on the PA-innovation relationship. This evidence-based information would assist managers to increase innovative behaviour, performance, competitive advantage, organisational success, growth, and organisational survival accordingly.

### **5.7 Methodological implications**

Often the relationship between variables are analysed using pooled data from many organisations. In some cases, single organisations are used as a case study to demonstrate the variance amongst variables. Other times, several organisations are compared, and conclusions are drawn about differences across organisations. In this study, analyses were performed across and within organisations. Applying this methodology clearly demonstrated that pooled data does not reflect the realities of all individual organisations, and that researchers should be very careful when generalising their findings.

### **5.8 Limitations of the study and suggested future research**

It is advisable to acknowledge the various limitations of a study when interpreting the results of that particular study. This study was subject to several specific limitations that warrant discussion. The first limitation is that it makes use of a cross-sectional survey design, focusing on quantitative data. Levin (2006) proposes that cross-sectional studies are carried out at a specific point in time and offer no hint of the sequence of events, thus making it impossible to infer causality from the

study. However, to overcome the limitations of a cross-sectional study, a longitudinal or experimental design is proposed. The second limitation was the exclusive use of respondents' perceptions in this study. The results may have been more explanatory had managers been included in the reporting or had organisational statistics, such as registered patents, been used. Therefore, multi-source and multi-method research is suggested to future researchers. The third restriction was that the study was conducted per organisation and did not include a sector analysis as the total number of organisations per sector was deemed insufficient for statistical analysis. Even if it can be expected that the unique sequences of items that predict innovation per organisation could be localised in specific sectors in South Africa, no patterns were observed to suggest this, but further research in this regard is still recommended. Lastly, the contingency model validation was impossible as data on the strategy of the organisations were not gathered which posed a further restriction. Future researchers are encouraged to also gather data on the present strategic positions of the organisations so as to be able to assess the applicability of all three models. It would be interesting to study the differences that may exist between the two measures of individual innovation as models pertaining to IIB yielded different outcomes compared to the models using IWB.

## **5.9 Summary of the chapter**

The research contributes to academic literature and theory on the PA-innovation relationship within the South African context, where no previous study of this nature has been conducted. This study has led to an increase in knowledge and discovery on the PA-innovation link. The positioning of PA amongst other antecedents is a valuable contribution to the body of knowledge. The aim and objectives of the research have been achieved. Achieving the research objectives allowed for the realisation of the principal research aim which was to quantify the position of PA as an antecedent to innovation in the workplace, both across employees and within South African organisations. The research also provided data-informed results to address the inconsistencies and controversies which existed in the PA-innovation literature as well as differences in perceptions amongst managers regarding the role of PA in innovation. The objectives, cumulatively, aimed at attaining a higher understanding of the PA-innovation phenomenon. This was achieved through the literature review as well as through the empirical analysis which represents a novel approach in terms of methodology. The magnitude of the PA-innovation relationship has been quantified,

relative to other organisational variables. This has not been reported before, as indicated in the first part of the literature in chapter two. Finally, academics and practitioners alike are alerted to the relative role of PA as a predictor of innovation, both within and across organisations.

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## APPENDICES

**Appendix A: Models of performance appraisal** – The researcher initially critically reviewed the PA literature to establish the most common elements included in the contemporary models of PA. This literature review is presented in Appendix A.

**Appendix B: Empirical article one for objective four** – This thesis also addresses the empirical research objectives in individual articles on the PA and innovation relationship which is presented in the Appendices (article one for research objective four is in Appendix B). The intent is to publish this article in a contemporary journal.

**Appendix C: Empirical article two for objective five** – This thesis also addresses the empirical research objectives in individual articles on the PA and innovation relationship which is presented in the Appendices (article two for research objective five is in Appendix C). The intent is to publish this article in a contemporary journal.

**Appendix D: Empirical article three for objectives six and seven** – This thesis also addresses the empirical research objectives in individual articles on the PA and innovation relationship which is presented in the Appendices (article three for research objectives six and seven is in Appendix D). The intent is to publish this article in a contemporary journal.

**Appendix E: Empirical article for objective eight** – This thesis also addresses the empirical research objectives in individual articles on the PA and innovation relationship which is presented in the Appendices (article four for research objective eight is in Appendix E). The intent is to publish this article in a contemporary journal.

**Appendix F: The quality of a performance appraisal (PA) system questionnaire** – The PA questionnaire is comprised of 18 statements designed to elicit the respondent's views on the PA process. A sample of the survey is presented in Appendix F.

**Appendix G: The individual innovative behaviour (IIB) questionnaire** – The IIB questionnaire consists of 14 questions and was chosen to quantify individual innovative behaviour. A sample of the survey is presented in Appendix G.

**Appendix H: The innovative work behaviour (IWB) questionnaire** – The IWB questionnaire consists of 10 questions and was additionally selected as it measures IWB. A sample of the survey is presented in Appendix H.

**Appendix I: The proactive personality (PP) scale** – The PP scale is comprised of 17 statements designed to elicit the respondent's views on proactive behaviour. A sample of the survey is presented in Appendix I.

**Appendix J: The leadership scale** – The Leadership scale questionnaire is used to assess transactional and TL and consists of 21 items. A sample of the survey is presented in Appendix J.

**Appendix K: The brief corporate entrepreneurship (CE) assessment instrument** – The CE instrument consists of 20 items and was chosen to quantify CE climate. A sample of the survey is presented in Appendix K.

**Appendix L: The human resource practice (HRP) scale** – The HRP scale was employed to assess the apparent effectiveness of HRPs. This questionnaire is comprised of 21 statements, arranged according to seven HRPs (training and development, compensation and rewards, PA, supervisor support, staffing, diversity management, and communication and information sharing) and with each HRP area containing three statements. A sample of the survey is presented in Appendix L.

**Appendix M: The Utrecht work engagement (WE) scale-9** – The WE scale includes the three founding facets of WE: vigour, dedication, and absorption. This questionnaire consists of nine statements (three vigour statements, three dedication statements, and three absorption statements). A sample of the survey is presented in Appendix M.

**Appendix N: The affective commitment (AC) scale** – The AC scale consists of eight items. A sample of the survey is presented in Appendix N.

**Appendix O: Research ethics application for research involving secondary data** – The researcher completed the research ethics application for research involving secondary data as presented in Appendix O.

**Appendix P: Ethical clearance** – Ethical clearance was obtained from the UNISA Research Ethics Review Committee (approval number: 2018\_SBL\_DBL\_003\_SD) for this study, and a copy of the ethics approval certificate is reflected in Appendix P.

**Appendix Q: Certificate from language expert** – Language editing was carried out on the thesis by an appropriate language editor as per the requirements set out by the UNISA GSBL.

**Appendix R: Student’s permission to submit thesis for examination** – Permission to submit this thesis for examination was granted by the research supervisor, Professor Renier Steyn as per the document presented in Appendix R.

**Appendix S: Turn-It-In originality report including primary sources** – A draft version as well as a final version of this thesis was submitted to the Turn-It-In software for an originality review. The draft version obtained a 26% similarity score while the final version obtained an 11% similarity score. None of the primary scores were above 1%. The originality report as well as the primary sources report is included in Appendix S.

## Appendix A: Models of performance appraisal

This section focuses on the concepts of performance appraisal (PA), and particularly the “other” concepts which are included in models with these variables. The reason behind finding these “other” variables was to identify the concepts typically included in a PA model. The strategy followed was to find a reasonable number of recent articles, which reported on words representative of PA, in their titles, and then find the “other” concepts which were included in the different models. The reasoning was that the authors of these articles would include those “other” concepts in the keywords of their respective articles. In Table 1 below, fifty research studies, and keywords are presented in chronological order.

**Table 1: Keywords included in articles on performance appraisal**

Article	Keywords – excluding PA
Ahmed, I., Mohammad, S.K. & Islam, T. (2013). The relationship between perceived fairness in <b>performance appraisal</b> and organisational citizenship behaviour in the banking sector of Pakistan: the mediating role of organisational commitment. <i>International Journal of Management and Innovation</i> , 5(2), 75-88.	organisational commitment, organisational citizenship behaviour, PA, banking sector
Aleassa, H.M. (2014). <b>Performance appraisal</b> satisfaction and counterproductive behaviours: Direct and moderating effects. <i>International Journal of Business Administration</i> , 5(1), 76-89.	appraisal satisfaction, exchange ideology, hostile attribution, fatalism, counterproductive behaviours, Jordan
Arogundade, O.T., Olasunkanmi-Alimi, T. & Arogundade, A.B. (2015). <b>Performance appraisal</b> knowledge: An implication on workplace commitment in a selected commercial bank in Lagos, Nigeria. <i>Ife Psychologia</i> , 23(1), 98-106.	organisational commitment, commercial bank, performance appraisal, employees

Article	Keywords – excluding PA
Arshad, M.A., Masood, M.T. & Amin, G. (2013). Effects of <b>performance appraisal</b> politics on job satisfaction, turnover intention and loyalty to supervisor: Study with reference to the telecom organisations of Pakistan. <i>International Review of Management and Business Research</i> , 2(3), 653-673.	perceived PA politics, organisation politics, job satisfaction, employee turnover, loyalty to supervisor
Ayers, R.S. (2013). Building goal alignment in federal agencies' <b>performance appraisal</b> programs. <i>Public Personnel Management</i> , 42(4), 495-520.	PA, goal alignment, federal agencies, strategic plan
Ayers, R.S. (2015). Aligning individual and organisational performance: Goal alignment in federal government agency <b>performance appraisal</b> programs. <i>Public Personnel Management</i> , 44(2), 169-191. doi: 10.1177/0091026015575178	PA, goal alignment, federal agencies, organisational performance, strategic management
Azzone, G. & Palermo, T. (2011). Adopting <b>performance appraisal</b> and reward systems. <i>Journal of Organisational Change Management</i> , 24(1), 90-111. doi: 10.1108/095348111111102300	organisational change, public sector organisations, Italy, central government, PA, change management
Bhatnagar, D. (2013). Perceived fairness of employees in <b>performance appraisal</b> system: with reference to Indian public and private sector banks. <i>Globsyn Management Journal</i> , 7(1), 67-81.	perception of fairness, PA, public and private sector bank
Brown, M., Hyatt, D. & Benson, J. (2010). Consequences of the <b>performance appraisal</b> experience. <i>Personnel Review</i> , 39(30), 375-396. doi: 10.1108/00483481011030557	PA, performance management, job satisfaction, pay, organisational behaviour, employee turnover



Article	Keywords – excluding PA
Chen, T., Wu, P. & Leung, K. (2011). Individual <b>performance appraisal</b> and appraisee reactions to workgroups. <i>Personnel Review</i> , 40(1), 87-105. doi: 10.1108/00483481111095537	PA, competitive strategy, group work, employee relations, China
Choi, B.K., Moon, H.K. & Ko, W. (2013). An organisation's ethical climate, innovation, and performance: Effects of support for innovation and <b>performance evaluation</b> . <i>Management Decision</i> , 51(6), 1250-1275. doi: 10.1108/MD-Sep-2011-0334	ethical climate, organisation's innovation, support for innovation, performance evaluation, financial performance, South Korea, innovation
Christensen, R.K., Whiting, S.W., Im, T., Rho, E., Stritch, J.M. & Park, J. (2013). Public service motivation, task, and non-task behaviour: A <b>performance appraisal</b> experiment with Korean MPA and MBA students. <i>International Public Management Journal</i> , 16(1), 28-52. doi: 10.1080/10967494.2013.796257	characteristics of managers, rater's public service motivation,
Ciobanu, A. & Ristea, B. (2015). The relationship between <b>performance appraisal</b> and civil servants' motivation. <i>Management Research and Practice</i> , 7(2), 5-19.	civil service, PA, motivation, job satisfaction, human resources research
Clarke, C., Harcourt, M. & Flynn, M. (2013). Clinical governance, <b>performance appraisal</b> and interactional and procedural fairness at a New Zealand public hospital. <i>Journal of Business Ethics</i> , 117(3), 667-678. doi: 10.1007/s10551-012-1550-9	clinical governance, PA, interactional justice, procedural justice
Culbertson, S.S., Henning, J.B. & Payne, S.C. (2013). <b>Performance appraisal</b> satisfaction: The role of feedback and goal orientation. <i>Journal of Personnel Psychology</i> , 12(4), 189-195. doi: 10.1027/1866-5888/a000096	PA, goal orientation, feedback sign, satisfaction

Article	Keywords – excluding PA
<p>Deepa, E., Palaniswamy, R. &amp; Kuppusamy, S. (2014). Effect of <b>performance appraisal</b> system in organisational commitment, job satisfaction and productivity. <i>Journal of Contemporary Management Research</i>, 8(1), 72-82.</p>	<p>job satisfaction, organisation culture, organisation citizenship behaviour, employee engagement, productivity</p>
<p>Dusterhoff, C., Cunningham, J.B. &amp; Macgregor, J.N. (2014). The effects of performance rating, leader-member exchange, perceived utility and organisational justice on <b>performance appraisal</b> satisfaction: Applying a moral judgment perspective. <i>Journal of Business Ethics</i>, 119(2), 265-273. doi: 10.1007/s10551-013-1634-1</p>	<p>PA satisfaction, moral judgment, leader-member relations, organisational justice</p>
<p>Fatma, S. (2016). Impact of <b>performance appraisal</b> system on human resource development: A brief case study in Bharat Sanchar Nigam Limited, Patna. <i>The International Journal of Business and Management</i>, 4(2), 337-346.</p>	<p>appraisal, human resource development, performance, training</p>
<p>Gbadamosi, G. &amp; Ross, C. (2012). Perceived stress and <b>performance appraisal</b> discomfort: The moderating effects of core self-evaluations and gender. <i>Public Personnel Management</i>, 41(4), 637-659.</p>	<p>Botswana, core self-evaluations, gender, perceived stress, PA discomfort</p>
<p>Germeroth, V.R. (2015). <i>Human resources administrator perceptions of procedural and distributive justice in <b>performance appraisals</b> as predictors of satisfaction among academic support staff</i>. Lindenwood: Lindenwood University.</p>	<p>procedural justice, job satisfaction, distributive justice, PA, disincentive, support staff</p>
<p>Grigoroudis, E., Tsitsiridi, E. &amp; Zopounidis, C. (2013). Linking customer satisfaction, <b>employee appraisal</b>, and business performance: An evaluation methodology in the banking sector. <i>Annals of Operations Research</i>, 205(1), 5-27. doi: 10.1007/s10479-012-1206-2</p>	<p>efficiency evaluation, banking sector, data envelopment analysis, customer</p>

Article	Keywords – excluding PA
	satisfaction, business performance, employee appraisal
<p>Gupta, V. &amp; Kumar, S. (2013). Impact of <b>performance appraisal</b> justice on employee engagement: A study of Indian professionals. <i>Employee Relations</i>, 35(1), 61-78. doi: 10.1108/01425451311279410</p>	<p>PA, procedural justice, distributive justice, informational justice, employee engagement, Indian context, performance management, India</p>
<p>Harrington, J.R. &amp; Lee, J.H. (2015). What drives perceived fairness of <b>performance appraisal</b>? Exploring the effects of psychological contract fulfillment on employees' perceived fairness of <b>performance appraisal</b> in U.S. federal agencies. <i>Public Personnel Management</i>, 44(2), 214-238. doi: 10.1177/0091026014564071</p>	<p>perceived fairness of PA, psychological contract fulfilment, performance management, public human resource management</p>
<p>Hii, L. &amp; Ahmad, R. (2015). Rater competency in conducting <b>performance appraisal</b> in the Malaysian public sector. <i>International Journal of Social Science and Humanity</i>, 5(1), 69-74. doi: 10.7763/IJSSH.2015.V5.424</p>	<p>PA, self-efficacy, PA discomfort, perceived system knowledge, rater competency</p>
<p>Iqbal, N., Ahmad, N., Haider, Z., Batool, Y. &amp; Qurat-ul-ain. (2013). Impact of <b>performance appraisal</b> on employee's performance involving the moderating role of motivation. <i>Arabian Journal of Business and Management Review (Oman Chapter)</i>, 3(1), 37-56.</p>	<p>PA, motivation, employee's performance</p>

Article	Keywords – excluding PA
<p>Jacobs, G., Belschak, F.D. &amp; Den Hartog, D.N. (2014). (Un)Ethical behaviour and <b>performance appraisal</b>: The role of affect, support, and organisational justice. <i>Journal of Business Ethics</i>, 121(1), 63-76. doi: 10.1007/s10551-013-1687-1</p>	<p>ethical behaviour, counterproductive work behaviour, PA, organisational justice, proactive behaviour, work affect</p>
<p>Khan, R.A. (2013). Effect of employees' perception of <b>performance appraisal</b> process on job satisfaction in Pakistani banking sector. <i>Global Management Journal for Academic and Corporate Studies</i>, 3(1), 111-121.</p>	<p>PA process, PA cycle, performance management system, organisational commitment, employee retention</p>
<p>Kumari, S. (2012). A study on <b>performance appraisal</b> errors of telecom managers in Navi Mumbai region. <i>SIES Journal of Management</i>, 8(2), 3-13.</p>	<p>PA, halo effect, horn effect, employee satisfaction, 360-degree appraisal, potential appraisal</p>
<p>Kuvaas, B. (2011). The interactive role of <b>performance appraisal</b> reactions and regular feedback. <i>Journal of Managerial Psychology</i>, 26(2), 123-137. doi: 10.1108/02683941111102164</p>	<p>PA, job satisfaction, Norway</p>
<p>Laguador, J.M. (2013). Engineering students' academic and on-the-job training <b>performance appraisal</b> analysis. <i>International Journal of e-Education, e-Business, e-Management and e-Learning</i>, 3(4), 301-305. doi: 10.7763/IJEEEE.2013.V3.245</p>	<p>academic performance, engineering, internship, on-the-job training</p>
<p>Mehrotra, S. &amp; Phillips, S.G. (2013). Awareness of banking professionals about <b>performance appraisal</b> methods: An empirical study. <i>IUP Journal of Bank Management</i>, 12(4), 45-57.</p>	<p>organisational goals, productivity, profitability</p>

Article	Keywords – excluding PA
Mitchell, L.D. (2010). Emotional responses to <b>performance appraisal</b> feedback: Implications for organisations. <i>The Journal of Applied Business and Economics</i> , 11(4), 82-108.	relevancy, congruency, accountability, PA, emotional reactions
Obisi, C. (2011). Employee <b>performance appraisal</b> and its implication for individual and organisational growth. <i>Australian Journal of Business and Management Research</i> , 1(9), 92.	employee PA, organisational growth, performance
Ojokuku, R.M. (2013). Effect of <b>performance appraisal</b> system on motivation and performance of academics in Nigerian public universities. <i>Australian Journal of Business and Management Research</i> , 3(3), 20-28.	human resource practices, PA system, motivation, performance, academics, public universities
Palaiologos, A., Papazekos, P. & Panayotopoulou, L. (2011). Organisational justice and employee satisfaction in <b>performance appraisal</b> . <i>Journal of European Industrial Training</i> , 35(8), 826-840. doi: 10.1108/03090591111168348	PA, perceived purposes, organisational justice, employee satisfaction, justice
Qiu, M., Hu, B., Zhang, X. & Li, Y. (2015). Employees' psychological ownership and self-efficacy as mediators between <b>performance appraisal</b> purpose and proactive behaviour. <i>Social Behaviour and Personality</i> , 43(7), 1101-1109. doi: 10.2224/sbp.2015.43.7.1101	evaluative PA, developmental performance appraisal, proactive behaviour, psychological ownership, self-efficacy, employees
Rani, A.S. (2013). <b>Performance appraisal</b> system at Reliance Communication Limited. <i>International Journal of Organisational Behaviour and Management Perspectives</i> , 2(4), 601-605.	PA, rewards, performance

Article	Keywords – excluding PA
Ryakhovskaya, A.N., Gruzina, Y.M., Arsenova, E.V., Linder, N.V. & Pukhova, M.M. (2015). Development of methodology for <b>performance assessment</b> and the effectiveness of innovation activity. <i>Mediterranean Journal of Social Sciences</i> , 6(5 S4), 189-196. doi: 10.5901/mjss.2015.v6n5s4p189	innovation activity, model, productivity, key performance indicators
Saeed, S. & Shah, F.M. (2016). Impact of <b>performance appraisal</b> on employee's motivation in Islamic banking. <i>Arabian Journal of Business and Management Review (Oman Chapter)</i> , 5(7), 1-8.	Islamic banks, rewards, work environment, training and development, employee's performance, employee's motivation, PA
Scaduto, A. (2011). <i>Improving reactions to performance appraisal: The effects of appraisal system characteristics, leader-member exchange, and trustworthiness</i> . Pennsylvania: The Pennsylvania State University.	performance ratings, justice, trustworthiness, motivation, satisfaction
Semakula-Katende, S., Schmickl, E.D. & Pelsler, T.G. (2013). Reward and attitudes: The unintended outcomes of an effective <b>performance appraisal</b> . <i>SA Journal of Human Resource Management</i> , 11(1), 1-11. doi: 10.4102/sajhrm.v11i1.545	PA, rewards, attitudes
Swiercz, P.M., Bryan, N.B., Eagle, B.W., Bizzotto, V. & Renn, R.W. (2012). Predicting employee attitudes and performance from perceptions of <b>performance appraisal</b> fairness. <i>Business Renaissance Quarterly</i> , 7(1), 25-46.	PA, fairness, job satisfaction, pay satisfaction, organisational commitment

Article	Keywords – excluding PA
Taneja, S., Srivastava, R. & Ravichandran, N. (2015). Consequences of <b>performance appraisal</b> justice perception: A study of Indian banks. <i>IUP Journal of Organisational Behaviour</i> , 14(3), 33-57.	interpersonal justice, procedural justice, informational justice, distributive justice, satisfaction, PA, fairness
Teh, C.J., Boerhannoeddin, A. & Ismail, A. (2012). Organisational culture and <b>performance appraisal</b> process: Effect on organisational citizenship behaviour. <i>Asian Business and Management</i> , 11(4), 471-484. doi: 10.1057/abm.2012.4	organisational citizenship behaviour, organisational culture, performance appraisal process
Thurston, P.W. & McNall, L. (2010). Justice perceptions of <b>performance appraisal</b> practices. <i>Journal of Managerial Psychology</i> , 25(3), 201-228. doi: 10.1108/02683941011023712	PA, job satisfaction, psychology, individual perception, strategic objectives
Tjahjono, H.K. (2014). The fairness of organisation's <b>performance appraisal</b> social capital and the impact toward affective commitment. <i>Bisnis and Birokrasi</i> , 21(3), 173-179.	affective commitment, distributive fairness, procedural fairness, social capital
Tuytens, M. & Devos, G. (2012). Importance of system and leadership in <b>performance appraisal</b> . <i>Personnel Review</i> , 41(6), 756-776. doi: 10.1108/00483481211263692	PA, feedback utility, procedural justice, charismatic leadership, secondary education
Yu, L. (2010). <i>The relationship between employee-supervisor cultural differences and perceived procedural justice in performance appraisal among Chinese employees</i> . Massachusetts: University of Massachusetts Lowell.	culture, procedural justice, PA

Article	Keywords – excluding PA
Zhang, X., Hu, B. & Qiu, M. (2014). Job satisfaction as a mediator in the relationship between <b>performance appraisal</b> and voice behaviour. <i>Social Behaviour and Personality</i> , 42(8), 1315-1323. doi: 10.2224/sbp.2014.42.8.1315	PA, developmental appraisal, evaluative appraisal, voice behaviour, prohibitive voice, promotive voice, job satisfaction
Zheng, W., Zhang, M. & Li, H. (2012). <b>Performance appraisal</b> process and organisational citizenship behaviour. <i>Journal of Managerial Psychology</i> , 27(7), 732-752. doi: 10.1108/02683941211259548	PA, organisational citizenship behaviour, social exchange, impression management, employees behaviour

It can be observed that PA is most referred to in the keywords. This was to be expected, as this was the primary focus of the articles, as per the titles. From the aforementioned, it can be observed that PA is most often linked with fairness (11 references – keywords: procedural fairness, perceptions of fairness, interactional justice, procedural justice, organisational justice, distributive justice, informational justice, perceived fairness of PA, justice, interpersonal justice, and distributive fairness). The second most common element PA is linked to is organisational citizenship behaviour (6 references – keywords: organisational commitment, organisational citizenship behaviour, organisational behaviour, proactive behaviour, psychological ownership, and affective commitment).

Apart from references to fairness and organisational citizenship behaviour, the next most common keywords found were related to satisfaction and motivation. Contemporary models of PA thus include, apart from fairness, concepts such as organisational citizenship behaviour, satisfaction, and motivation, in descending order of popularity.



## **Appendix B: Empirical article one for objective four**

In this article, the effect of PA on innovation was investigated by presenting empirical evidence on the link between PA and innovation (and its relative influence, given non-human resource antecedents). The researcher addresses the fourth research objective via an empirical study in the form of the article below.

### **PERFORMANCE APPRAISAL AS AN ANTECEDENT TO INNOVATION: AN ANALYSIS OF ITS RELATIVE IMPORTANCE**

#### **Abstract**

Literature suggests that performance appraisal (PA) contributes to innovation. However, appropriate knowledge with regard to the absolute and relative importance of PA to innovation, the different aspects of PA which drive innovation, as well as PA as an antecedent amongst other antecedents to innovation, has not been adequately described. This knowledge will be useful in addressing the matter of clarity on specific drivers of innovation across employees as well as in contextualising the influence of PA within the South African context. The study empirically investigated 3 180 employees drawn from 53 companies within the private sector, parastatals, and government departments, by using a cross-sectional survey design which focused on quantitative data. The respondents represented a broad cross-section of South African employees. PA and three other known antecedents to innovation, as well as innovation itself, were measured. It was found that PA (as a single variable) was responsible for between 3.8% and 5.7% of the variance in innovation. Items in the PA scale with a clear link to innovation were identified, and these thematically focused on organisational performance, and on communication or negotiation between management and the employee. It was also found that, when PA was combined with other antecedents of innovation, leading to between 23.9% and 26.6% of the variance in innovation being explained, the role of PA remained significant, though mostly secondary. Amongst the other control variables, PA was the second most dominant predictor. The importance and relative importance of PA as an antecedent to innovation in the workplace has thus been established. The

outcomes of this study may assist managers and human resource practitioners to focus on appropriate, evidence-based information when attempting to enhance innovation.

**Keywords:** Corporate entrepreneurship, innovation, performance appraisal, proactive personality, South Africa, transformational leadership

## 1 Background

Innovation is a prerequisite for organisational survival in the global business environment (Abbaspour, 2015; Ceylan, 2013; Runfeng, 2011). In addition, Akman and Yilmaz (2008) recognise innovation as a key success factor in a progressively competitive international economy. Competitive advantage and growth can be realised and sustained only through periodic or continuous innovation (Abbaspour, 2015; Hurley, & Hult, 1998; Muller, Valikangas, & Merlyn, 2005). By the same token, Ryakhovskaya, Gruzina, Arsenova, Linder, and Pukhova (2015) and Wu, Sears, Coberley, and Pope (2016) argue that innovation, along with other variables such as collaboration, is viewed as sources of competitive advantage.

There are many antecedents to innovation. These include: leadership (Al-Husseini, & Elbeltagi, 2012; García-Morales, Matías-Reche, & Hurtado-Torres, 2008; Hu, Gu, & Chen, 2012; Khan, Aslam, & Riaz, 2012; Paulsen, Callan, Ayoko, & Saunders, 2013; Tipu, Ryan, & Fantazy, 2012), organisational climate (Michaelis, Stegmaier, & Sonntag, 2010; Shanker, Bhunugopan, & Fish, 2012), organisational culture (Michaelis, Stegmaier, & Sonntag, 2010; Tipu, Ryan, & Fantazy, 2012), organisational design (Michaelis, Stegmaier, & Sonntag, 2010), performance appraisal (PA) (Aktharsha, & Sengottuvel, 2016; Choi, Moon, & Ko, 2013; Dalota, & Perju, 2010; Runfeng, 2011), proactive personality (PP) (Seibert, Kraimer, & Crant, 2001; Tai, & Mai, 2016; Zhang, Li, & Yu, 2014), and other human resource practices (HRPs) (Aktharsha, & Sengottuvel, 2016; Dalota, & Perju, 2010; Kong, Chadee, & Raman, 2013; Matthew, 2014).

Considering HRPs, Aktharsha and Sengottuvel's (2016) study revealed that there are three main HRPs, namely PA; recruitment and selection; and compensation and reward that are significant predictors of knowledge sharing behaviour. It has already been established that knowledge sharing behaviour plays an important role in predicting innovation capability (Aktharsha, &

Sengottuvel, 2016). Also referring to specific practices, the study by Dalota and Perju (2010) presents evidence that specific HRPs, namely PA, rewards, career opportunities, and employee participation, result in innovation. Dalota and Perju (2010) posit that the utilisation of HRPs within an organisation could encourage employees to generate innovative ideas that promote innovation. Also, with reference to innovation, Shipton, West, Dawson, Birdi, and Patterson (2006) found that PA plays an important role in predicting innovation capability. Swanepoel, Erasmus, and Schenk (2008) affirm the aforementioned and state that the measurement of employee performance is vital to the organisation achieving its goals and objectives.

Evidence of empirical research on the link between PA and innovation is seemingly lacking within the South African context. It is also not surprising that much of the PA-innovation research is conducted primarily within the Western context (Dalota, & Perju, 2010; Jimenez-Jimenez, & Sanz-Valle, 2005). This research will attempt to fill this void.

Although some studies (e.g., Bal, Bozkurt, & Ertemsir, 2014; Jimenez-Jimenez, & Sanz-Valle, 2005; Mark, & Akhtar, 2003; Shipton, West, Dawson, Birdi, & Patterson, 2006) have uncovered a link between PA and innovation, the research on the PA-innovation link has often been single-company or single-industry driven and undertaken with relatively small samples. This study will explore the relationship both organisation-wide and across sectors.

Also, as noted by DeNisi and Pritchard (2006), much of the research has been limited to examining PA as a free-standing concept rather than as an integral part of performance management and other HRPs. Previous research in which other antecedents are included in the analysis of the PA-innovation link is scarce, whereas this study will attempt to include several other antecedents in the model.

The investigation of the PA-innovation link is also a very pressing problem from a business perspective, given the importance of innovation, as highlighted in the first paragraph, and given the amount of money and time that organisations devote to PA (Grote, 1996; Khoury, & Analoui, 2004).

## **1.1 Research problem**

Literature suggests that PA contributes to innovation. However, appropriate knowledge with regard to the various aspects of PA, the relative importance of PA, and PA as an antecedent amongst other antecedents to innovation is not adequately described. This nuance of information with regard to the PA-innovation relationship may result in the inappropriate allocation of resources to PA which, in turn, impedes the organisation's success. Furthermore, this link has not been well investigated in South Africa, where conditions may be unique.

## **1.2 Aim**

The article aims to investigate the importance of PA as an antecedent to innovation in the workplace, focusing on aspects of PA, to investigate PA as a single concept, and to quantify the relative importance of PA as a driver of innovation compared to other antecedents of innovation.

## **2 Literature review**

Ayers (2013), DeNisi and Pritchard (2006), Esu and Inyang (2009), and Rubin (2011) argue that successful organisations exploit HRPs, such as PA, as management tools to improve performance and effectiveness. PA is one of the most vital components of human resource management practice (Boswell, & Boudreau, 2000; Judge, & Ferris, 1993) and contributes to continuous improvement in the present business environment (Ahmed, Mohammad, & Islam, 2013).

PAs are regularly discussed in the literature and applied in practice. Almost all organisations globally make use of some sort of PA system (DeNisi, & Pritchard, 2006; Mitchell, 2010; Nankervis, & Compton, 2006), therefore human resource researchers and practitioners alike have devoted close to a century to PA research (DeNisi, & Pritchard, 2006; Siaguru, 2011).

PAs are utilised for a multitude of purposes - such as decision making with regard to compensation, promotions, retention, and developmental needs and, if conducted effectively, can significantly contribute to employee motivation and satisfaction (DeNisi, & Pritchard, 2006; Espinilla, de Andrés, Martínez, & Martínez, 2013; Grobler, Wärnich, Carrell, Elbert, & Hatfield, 2011). PA systems incorporate all those facets of human resource management that are intended to advance the effectiveness and efficiency of both the organisation and the employee (Khoury, &

Analoui, 2004). Furthermore, Khan (2013) argues that the PA system is an important component of the performance management process which links company goals and daily performance achievements, as well as individual development and rewards. Grobler, Wörnich, Carrell, Elbert, and Hatfield (2011) indicate that PAs are key to the development of an organisation's human capital.

The link between PA and innovation has been empirically established according to studies conducted by researchers Jimenez-Jimenez and Sanz-Valle (2005), and Mark and Akhtar (2003), who suggest that PA is an important HRP responsible for innovation. Bal, Bozkurt, and Ertemsir (2014), Jimenez-Jimenez and Sanz-Valle (2005) and Shipton, West, Dawson, Birdi, and Patterson (2006) establish that there is a strong and positive link between PA and innovation. Specifically, Shipton, West, Dawson, Birdi, and Patterson (2006) argue that PAs that are focused predominantly on employee development foster innovation. Chen and Huang (2009) indicate that organisations with highly effective PA systems achieve superior innovation results.

It is interesting to note that the effect of PA on innovation may be indirect. Ling and Nasurdin (2011), for example, suggest that workers achieve better results in innovative undertakings as PAs increase worker satisfaction and commitment. In the study by Ling and Nasurdin (2011), it was also demonstrated that PAs are positively correlated to knowledge management effectiveness. These researchers found that knowledge management effectiveness completely mediates the link between PA and innovation (Ling, & Nasurdin, 2011). In the study conducted by Runfeng (2011), the author found that organisational innovative climate has a mediating effect on the relationship of PA on innovative behaviours. This supports the notion that PAs have indirect effects on innovation.

In studying the literature on innovation, it is interesting to note that Sethibe and Steyn (2015) indicate that many of the researchers focused almost exclusively on transformational leadership (TL) when studying the relationship between leadership and innovation. Furthermore, TL is positively and significantly related to innovation according to Al-Husseini and Elbeltagi (2012), Hu, Gu and Chen (2012), Khan, Aslam and Riaz (2012), Paulsen, Callan, Ayoko and Saunders (2013), Sethibe and Steyn (2016), and Tipu, Ryan and Fantasy (2012). In the study by Sethibe and Steyn (2016), however, the researchers found no direct relationship between

transactional leadership and innovation. Another important antecedent to innovation is organisational climate (Michaelis, Stegmaier, & Sonntag, 2010; Nusair, 2013; Panuwatwanich, Stewart, & Mohamed, 2008; Shanker, Bhunugopan, & Fish, 2012). According to these authors, Björkdahl and Börjesson (2011), Lin and Liu (2012), Michaelis, Stegmaier and Sonntag (2010), Shanker, Bhunugopan and Fish (2012), and Zhang and Begley (2011), there is a significant relationship between climate and innovation. On the other hand, PP is significantly and positively related to innovative behaviour (Seibert, Kraimer, & Crant, 2001; Tai, & Mai, 2016; Zhang, Li, & Yu, 2014). Fuller and Marler (2009), Parker, Williams and Turner (2006), Seibert, Kraimer and Crant (2001), and Thomas, Whitman, and Viswesvaran (2010), posit that PP is the main determinant of innovative behaviours. It is apparent from the literature that TL, organisational climate and PP are significant predictors of innovation.

It becomes clear from the literature that TL, organisational climate and PP are significant predictors of innovation. It would be interesting to study the relative importance of PA, given these other antecedents to innovation.

### **3 Method**

In this section, the research approach, measuring instruments and statistical analysis are presented.

#### **3.1 Research approach**

A cross-sectional survey design, which focused on quantitative data, was used for this study. Bryman (2012) and Punch (1998) note that a quantitative research design strategy is appropriate for this type of study as it readily allows the establishment of relationships between variables. In this study, secondary data was utilised for the analysis.

The data was collected as part of a research project led by the second author of the study. Only South African organisations formed part of the study. The sample for the organisations was not random, but rather a convenience sample. Once the organisations had been identified, respondents were selected at random from the organisation's employee records. Ultimately, data consisted of 3 180 employees employed by 53 organisations within South Africa. The data was collected in accordance with the ethics guidelines of the University of South Africa (UNISA), and permission

was obtained from the UNISA Research Ethics Review Committee to use the data as secondary data.

### 3.2 Measuring instruments

The six instruments utilised for this study were: the quality of a Performance Appraisal system questionnaire (Steyn, 2010), the Individual Innovative Behaviour questionnaire (Kleysen, & Street, 2001), the Innovative Work Behaviour questionnaire (De Jong, & Den Hartog, 2010), the Proactive Personality scale (Bateman, & Crant, 1993), a part of the Leadership scale, specifically the Transformational Leadership scale portion (Wolins, 2012), and the brief Corporate Entrepreneurship assessment instrument (Strydom, 2013). In this study, two measures of individual innovation in the workplace were assessed, specifically IIB and IWB.

- The quality of a PA system questionnaire, developed by Steyn (2010), was employed to assess the perceived effectiveness of PA systems in organisations. This questionnaire is based on human resource management literature (Cascio, 2010; Grobler, Wörnich, Carrell, Elbert, & Hatfield, 2006; Noe, Hollenbeck, Gerhart, & Wright, 2008; Snell, & Bohlander, 2007; Swanepoel, Erasmus, & Schenk, 2008) which describes the characteristics of an effective PA system. Grobler, Wörnich, Carrell, Elbert, and Hatfield (2006) provide a full list of necessities for an effective PA system, and the majority of the literature was therefore adapted from these authors. The PA questionnaire comprises 18 statements designed to elicit the respondent's views on the PA process. Respondents were invited to indicate their views for each item on a five-point scale ranging from 1 to 5 as follows: 1 (Absolutely false – this is true in +/-10% of all cases), 2 (Somewhat false – this is true in +/-35% of all cases), 3 (Neither true nor false), 4 (Somewhat true – this is true in +/-75% of all cases), and 5 (Absolutely true – this is true in +/-90% of all cases). The lowest score that could be obtained was 18, and the highest was 90. A high score would be indicative that a traditionally defined PA system was in place and functioning effectively, while a low score would indicate that the respondents were convinced that a traditionally defined PA system was not functioning in their organisation (Steyn, 2010). Furthermore, Steyn (2010) reports internal consistency to have a Cronbach alpha of 0.84 and significant correlations (in the expected direction) with

results such as turnover intentions ( $R=0.311$ ;  $p<0.01$ ), job satisfaction ( $R=0.281$ ;  $p<0.01$ ) and employee engagement ( $R=0.318$ ;  $p<0.01$ ).

- The Individual Innovative Behaviour (IIB) questionnaire by Kleysen and Street (2001) was chosen to quantify IIB. According to Kleysen and Street (2001), there is a lack of studies on a multi-dimensional measure of IIB. The IIB questionnaire consists of 14 questions, randomly itemised to avoid possible response order bias. Respondents were requested to indicate their views for each question on a six-point scale ranging from 1 (Never) to 6 (Always). The lowest score that could be obtained was 14 and the highest 84. Each of the 14 items was prefaced with the following question: “In your current job, how often do you...” (Kleysen, & Street, 2001: 288). Kleysen and Street (2001) report that a measure of inter-correlation between the 14 questions resulted in a Cronbach alpha of 0.95 and good construct validity. All five factors are strongly correlated with each other, with the highest correlation being between application and formative investigation ( $R=0.81$ ;  $p<0.01$ ) and the lowest between championing and generativity ( $R=0.68$ ;  $p<0.01$ ). Kleysen and Street (2001) thus suggest that the 14 items can be combined into a single measure of innovative behaviour, and this was done for this research.
- The Innovative Work Behaviour (IWB) questionnaire from De Jong and Den Hartog (2010) was additionally selected as it measures IWB. The IWB questionnaire consists of 10 questions. The existing IWB questionnaire had to be modified for the purposes of this study. No measurement scale was provided in the De Jong and Den Hartog (2010) article. A scale was therefore introduced, ranging from (0) Never to (6) Always. The lowest score that could be obtained was 0 and the highest 60. The following is a question from the original IWB questionnaire: “How often does this employee...pay attention to issues that are not part of his daily work?” (De Jong, & Den Hartog, 2010: 29). This format did not suit the study, which emphasises the views of individuals concerning their IWB. All ten items of the questionnaire were thus amended to begin “As an employee how often do you...” instead of “How often does this employee...”. De Jong and Den Hartog (2010) report that the instrument is adequately reliable (Cronbach alpha $>0.7$ ). According to De Jong and Den Hartog (2010), there is clear evidence that employee’s innovation outputs ( $R=0.35$ ;  $p<0.01$ ), participative leadership ( $R=0.25$ ;  $p<0.01$ ) and



external work contacts ( $R=0.27$ ;  $p<0.01$ ) correlate with IWB and this points to good criterion validity. The adapted version of the instrument was used for this research.

- The Proactive Personality (PP) scale, developed by Bateman and Crant (1993), is comprised of 17 statements designed to elicit the respondent's views on proactive behaviour. Respondents were invited to indicate their views for each statement on a five-point scale ranging from 0 to 4 as follows: 0 (Strongly disagree), 1 (Disagree), 2 (Not sure), 3 (Agree), and 4 (Strongly agree). Likewise, the lowest score that could be obtained was 0 and the highest 68. Bateman and Crant (1993) report internal reliability with a Cronbach alpha of 0.89. By the same token, Bateman and Crant (1993) argue that the proactive scale was significantly correlated to all three criterion variables, which is indicative of criterion validity, while discriminant validity was exposed between the proactive scale and intelligence, neuroticism, agreeableness, openness, private self-consciousness, and locus of control.
- The Leadership scale questionnaire developed by Avolio, Bass, and Jung (1999) is used to assess transactional and transformational leadership (TL) and consists of 21 items. The focus of this portion of the study will be on TL rather than transactional leadership, as Sethibe and Steyn (2016) indicate that there is no direct relationship between transactional leadership and innovation, whereas TL is positively and significantly related to innovation. The TL scale portion of the questionnaire consists of 12 items, as described by Wolins (2012), and only this part was used for this research. Respondents were requested to indicate their views for each item on a five-point scale ranging from 0 (Not at all) to 4 (Frequently, if not always). The minimum score on the TL scale portion of the questionnaire would be 0 and the maximum 48. Strydom (2013) reports reliability as having a Cronbach alpha of 0.87, while Sethibe and Steyn (2016) report a Cronbach alpha of 0.94 for the TL scale portion. In a study by Antonakis, Avolio, and Sivasubramanian (2003), these authors' results indicate that the Leadership scale questionnaire is both reliable and valid.
- The brief Corporate Entrepreneurship (CE) assessment instrument by Strydom (2013) was chosen to quantify CE climate. The CE instrument consists of 20 items and respondents

were requested to indicate their views for each item on a scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). The minimum score on the CE instrument would be 20 and the maximum 100. A high score would indicate that respondents are of the view that there are high levels of entrepreneurial support in the organisation, while a low score would show low support for entrepreneurship (Strydom, 2013). Strydom (2013) reports an adequate reliability score (Cronbach alpha=0.810) for the total CE instrument, while also reporting Cronbach alphas of 0.731, 0.825, 0.740, 0.689, and 0.574 for the subsections management support, work discretion, rewards, time available, and organisation boundaries respectively. Outcomes with regard to the organisation boundaries subsection should be viewed with some caution, particularly due to its Cronbach alpha being below 0.6. Entrepreneurial spirit intensifies with a rise in employee engagement, organisational commitment, and job satisfaction and this is indicative of concurrent validity (Strydom, 2013). Furthermore, Strydom (2013) reports that, when the factor analysis was concluded, all items loaded as expected, with values above 0.5 suggesting factorial validity for the CE instrument.

### **3.3 Statistical analysis**

The Statistical Package for Social Science (SPSS) was used to perform all the statistical analysis for this study. Frequencies were computed to provide biographical data on respondents.

Basic descriptive statistics were computed for the independent and dependant variables. These included means and standard deviations. Cronbach alphas were computed to confirm internal consistency (reliability) of all instruments. Hair, Black, Babin, and Anderson (2009), and Ursachi, Horodnic and Zait (2015), suggest that reliability is acceptable when the alpha is above 0.6. Therefore, all instruments with a Cronbach alpha greater than 0.6 were deemed to be internally consistent.

Correlation coefficients (for binary relationships) were also calculated between PA (as a single construct) and for innovation behaviour. Pearson correlations (2-tailed) were used to determine the magnitude of the relationship between the variables and correlations were deemed statistically significant at the 0.01 level. Cohen's (1988) guidelines for the social sciences to compute the

practical significance of the alphas is as follows: R above 0.5 is considered “large”, R above 0.3 but below 0.5 is considered “medium”, and R above 0.1 but below 0.3 is considered “small”.

Regression analysis (for multiple relationships) was also calculated. This was done firstly to calculate how the different items of PA predict IIB and IWB, secondly to identify which items of PA significantly and uniquely predict IIB and IWB and, lastly, to indicate how PA and the control variables PP, CE and TL can be regressed to predict the dependent variables, IIB and IWB. The “Enter” option in SPSS was selected for the regression analysis where all the individual PA items are regressed to predict individual innovation. In order to identify individual PA items which contribute uniquely and significantly to predicting individual innovation, “Stepwise” regressions were performed using the “Stepwise” option in SPSS. Finally, to assess the relative importance of PA, compared to other organisational variables, PA and the control variables PP, CE and TL were regressed to predict innovation. Once again, the “Stepwise” procedure was followed so as to identify those variables which uniquely and significantly predict innovation.

As suggested by Pallant (2013), and Peck, Olsen and Devore (2011), the percentage variance in the dependent variables was calculated by multiplying the  $R^2$  values by 100. This is also known as the coefficient of determination.

## **4 Results**

### **4.1 Biographical data**

The dataset was drawn from the responses of 3 180 employees drawn from 53 companies within South Africa, representing the private sector, parastatals, and government departments.

**Gender:** The respondents in this study were categorised into two gender groups. The 2016 Quarterly Labour Force Survey indicates that the gender demographic across South Africa as a whole is almost equally distributed (Statistics South Africa, 2016), and this is closely aligned to the gender sample in this study. A total of 1 771 (55.7%) respondents recorded their gender as male, and 1 372 (43.1%) recorded their gender as female, while the missing data amounted to 37 (1.2%).

**Race:** The respondents in this study were categorised into four race groups, and this data is aligned to the Quarterly Labour Force Survey in the sense that, in the larger South African context, Blacks make up the largest workforce group, followed by Whites, Coloureds, and Asians in descending order (Statistics South Africa, 2016). A total of 263 (8.3%) respondents in this study marked Asian, 1 830 (57.5%) Black, 263 (8.3%) Coloured, and 787 (24.7%) White, while the missing data is 37 (1.2%).

**Age:** The 2016 Quarterly Labour Force Survey indicates that the age of the South African workforce ranges from 15 to 64 years (Statistics South Africa, 2016), and this is closely aligned to the respondents in this study whose ages range from 20 to 72 years, with a mean of 37.81 and a standard deviation of 9.10.

**Educational qualifications:** A total of 934 (29.4%) respondents hold a bachelor's degree or higher, 1 274 (40.1%) possess a diploma, 789 (24.8%) have matric, and 143 (4.5%) have less than 12 years of schooling, while the missing data is 40 (1.3%).

**Management and tenure:** Those in management positions totalled 1 156 (36.4%) and those in non-management positions represented 1 983 (62.4%), while the missing data was 41 (1.3%). As far as tenure at their present company is concerned, this varied between one month and 42 years, with a mean of 8.49 and a standard deviation of 7.45.

**Job categorisation:** The respondents in this study were grouped into five job categories. A total of 72 (2.3%) respondents form part of an unskilled and defined decision-making group, 626 (19.7%) form part of a semi-skilled and discretionary decision-making group, 1 359 (42.7%) are skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents, 893 (28.1%) are professionally qualified, experienced specialists and middle management, and 163 (5.1%) are members of top or senior management, while the missing data is 67 (2.1%). Respondents in core businesses totalled 1 432 (45.0%), and those in support businesses represented 1 730 (54.4%), while the missing data was 18 (0.6%).

**Economic sectors:** The companies in this study were categorised into three sectors already alluded to. A total of 1 981 (62.3%) companies fall within the private sector, 480 (15.1%) are parastatal,

and 719 (22.6%) are government departments, for example, the Department of Trade and Industry, the Department of Tourism, and so on.

From the above, it is clear that the respondents represent a broad cross-section of the South African working population.

## 4.2 Descriptive data

Table 1 presents the means and standard deviations of all constructs included in the study, as well as for the individual PA items. Cronbach alphas for the instruments are also presented in the last column.

**Table 1: Descriptive data (N=3 180)**

PA items / Scale	Item content	Mean	Std. Dev.	$\alpha$
PA <sub>1</sub>	The PA system at my organisation is the primary mechanism used to assess the performance of the employees.	3.586	1.296	N/A
PA <sub>2</sub>	I received formal training on the PA system used by my organisation and understand the system fully.	3.193	1.449	N/A
PA <sub>3</sub>	The consequences and rewards allocated are reflective of the individuals' scores or rating on the PA system.	3.210	1.357	N/A
PA <sub>4</sub>	All the performance targets set and recorded on the PA system add significant value to the success of the business.	3.373	1.302	N/A
PA <sub>5</sub>	Only elements relevant to the success in my job are assessed and all elements relevant to success in my job are included in the performance standard.	3.275	1.260	N/A
PA <sub>6</sub>	My manager consistently gives me higher or lower marks than what a fair rater would do.	3.352	1.330	N/A
PA <sub>7</sub>	When my performance stays consistent, but factors beyond my control cause a decline in my outputs, my PA remains consistent.	2.979	1.291	N/A
PA <sub>8</sub>	The PA system is not biased and differentiates between the more effective and less effective performers.	3.055	1.321	N/A
PA <sub>9</sub>	The PA system in my organisation is easy to administer, from the perspective of both the manager and the subordinate.	3.101	1.341	N/A

PA items / Scale	Item content	Mean	Std. Dev.	$\alpha$
PA <sub>10</sub>	The PA system is accepted and supported by all parties in my organisation.	3.055	1.328	N/A
PA <sub>11</sub>	The decisions that are made on the grounds of the PAs are relevant, sound and do not often lead to labour disputes.	3.114	1.288	N/A
PA <sub>12</sub>	The PA system is well aligned with the business strategy.	3.325	1.291	N/A
PA <sub>13</sub>	Managers negotiate each of their team member's specific, measurable and stretching performance targets.	3.247	1.302	N/A
PA <sub>14</sub>	Managers regularly review both unit and individual performance with those concerned and take appropriate action to ensure that targets are reached or exceeded.	3.181	1.320	N/A
PA <sub>15</sub>	The effectiveness of the performance management system is formally evaluated at least once a year and appropriate improvements are made for the next cycle.	3.229	1.327	N/A
PA <sub>16</sub>	My input is taken into consideration for the improvements of the PA system for the next cycle.	2.946	1.352	N/A
PA <sub>17</sub>	Continuous assessment of my performance is being done regularly and recorded.	3.306	1.282	N/A
PA <sub>18</sub>	Formal feedback on my final PAs feedback is given by my manager.	3.607	1.326	N/A
PA	Performance Appraisal	58.133	16.072	0.930
IIB	Individual Innovative Behaviour	36.662	9.608	0.951
IWB	Innovative Work Behaviour	52.988	13.173	0.893
PP	Proactive Personality	53.792	8.971	0.843
CE	Corporate Entrepreneurship	65.743	9.321	0.762
TL	Transformational Leadership	2.516	0.972	0.946

As reflected in Table 1, the individual PA item scores varied, with PA<sub>16</sub> showing the lowest mean (mean=2.946; standard deviation=1.352) and PA<sub>18</sub> showing the highest (mean=3.607; standard deviation=1.326).

### 4.3 Reliability

As can be seen from Table 1, PA registers a high internal consistency (Cronbach alpha=0.930). Reliability was calculated for the IIB, as well as the IWB questionnaire, which resulted in Cronbach alphas of 0.951 and 0.893 respectively. Reliability for the 17-item PP scale was 0.843 and, for the 20-item CE instrument, the Cronbach alpha was 0.762. Lastly, for the 12-item TL

scale, the Cronbach alpha was 0.946. All six scales have a Cronbach alpha above 0.6, which means that the reliability of all scales is acceptable.

#### 4.4 Validity

An analysis of the relationships between the dependent variables in this study shows that convergent validity is evident since the IIB questionnaire correlated significantly (with a large effect) with the IWB questionnaire ( $R=0.683$ ;  $p<0.01$ ). The relationship between the independent variables and the dependent variables also provides evidence of divergent validity. The IIB questionnaire correlated with the PA questionnaire ( $R=0.196$ ;  $p<0.01$ ), and the IWB questionnaire correlated with the PA questionnaire ( $R=0.239$ ;  $p<0.01$ ). The fact that these correlations were not of practical significance, suggest that the instruments measure different constructs.

Since convergent validity is a measure of variables that are related to each other (Trochim, Donnelly, & Arora, 2015), a larger correlation was expected between IIB and IWB than between PA and IIB or PA and IWB, as these two variables are theoretically similar. The correlations between IIB and PA, and between IWB and PA, may be low but are significant as PA may be an antecedent to IIB and IWB. The collected data thus provide some evidence of the validity of the measures used.

#### 4.5 Correlative and regression analysis

Table 2 presents the results pertaining to the relationship between PA and antecedents to innovation.

**Table 2: Total sample correlative and regression analysis (N=3 180)**

Column 1	Column 2	Column 3	Column 4	Column 5
Measure of innovation	PA and innovation	All items of PA and innovation	All items of PA and innovation (Optimal model)	PA and innovation with other control variables
IIB	$R=0.196$ ; $p<0.01$	$R^2_{\text{adjusted}}=0.081$ ; $p<0.01$	$R^2_{\text{adjusted}}=0.078$ ; $p<0.01$ ; Items 4, 16, 2, 5,3 and 14	$R^2_{\text{adjusted}}=0.239$ ; $p<0.01$ ; Scales: PP, CE, PA, TL
IWB	$R=0.239$ ; $p<0.01$	$R^2_{\text{adjusted}}=0.106$ ; $p<0.01$	$R^2_{\text{adjusted}}=0.105$ ; $p<0.01$ ; Items 13, 17, 4, 16, 2, 15, 1 and 5	$R^2_{\text{adjusted}}=0.266$ ; $p<0.01$ ; Scales: PP, PA, CE, TL

In column 2, depicting the relationship between PA (as a composite score) and individual innovation, measured with different instruments, it can be reported that  $R=0.196$  for IIB and  $R=0.239$  for IWB. In both cases, the correlation coefficients were statistically significant. When considering the practical significance,  $R$  for IIB and IWB is “small”. Considering the coefficient of determination, 3.8% of the variance in IIB and 5.7% of the variance in IWB could be declared by PA. It is, therefore, practically insignificant.

The results of the regression are presented in column 3 where all the individual PA items of the PA instrument are regressed to predict individual innovation. The “Enter” option in SPSS was selected for this analysis. It can be reported that  $R^2_{\text{adjusted}}=0.081$  for IIB and  $R^2_{\text{adjusted}}=0.106$  for IWB, depicting the relationship between all items of PA and innovation, measured with different instruments. In both cases, the correlation coefficients were statistically significant. When considering the practical significance,  $R^2_{\text{adjusted}}$  for IIB and IWB is “small”. Using all the items of the PA questionnaire allowed for 8.1% of the variance in IIB and 10.6% of the variance in IWB to be declared. Though this is still practically insignificant, it seems that the items are a better predictor of innovation than are the aggregate scores.

In order to identify those individual PA items which contribute uniquely and significantly to predicting individual innovation, “Stepwise” regressions were performed using the “Stepwise” option in SPSS. From column 4, it can be read that items 4, 16, 2, 5, 3 and 14 (listed in descending order of influence on innovation) of the PA questionnaire are the elements of PA which influence IIB uniquely and significantly, while items 13, 17, 4, 16, 2, 15, 1 and 5 (listed in descending order of influence on innovation) of the PA questionnaire are the elements of PA which influence IWB uniquely and significantly.

Items common to predicting IIB and IWB were as follows:

- Item 2: I received formal training on the PA system used by my organisation and understand the system fully.
- Item 4: All the performance targets set and recorded on the PA system add significant value to the success of the business.



- Item 5: Only elements relevant to the success in my job are assessed and all elements relevant to success in my job are included in the performance standard.
- Item 16: My input is taken into consideration for the improvements of the PA system for the next cycle.

Items unique to predicting IIB read as follows:

- Item 3: The consequences and rewards allocated are reflective of the individuals' scores or rating on the PA system.
- Item 14: Managers regularly review both unit and individual performance with those concerned and take appropriate action to ensure that targets are reached or exceeded.

Items unique to predicting IWB read as follows:

- Item 1: The PA system at my organisation is the primary mechanism used to assess the performance of the employees.
- Item 13: Managers negotiate each of their team member's specific, measurable and stretching performance targets.
- Item 15: The effectiveness of the performance management system is formally evaluated at least once a year and appropriate improvements are made for the next cycle.
- Item 17: Continuous assessment of my performance is being done regularly and recorded.

From the above, it is clear that four out of the 18 items are common predictors of innovation, while six of the 18 are unique predictors. Considering these important predictors, two themes may be extracted: 1) a clear link with organisational performance, and 2) communication or negotiation between management and the employee.

To assess the relative importance of PA, compared to other organisational variables, PA and the control variables PP, CE and TL were regressed to predict innovation. Once again, the "Stepwise" procedure was followed so as to identify those variables which uniquely and significantly predict

innovation. In the comprehensive model, where the different antecedents were included, 23.9% of the variance in IIB was explained (column 5). This is compared to the 8.1% variance explained to PA as an individual predictor (column 3). Staying with the comprehensive model, where the different antecedents were included, 26.6% of the variance in IWB was explained (column 5). This is compared to the 10.6% variance explained to PA as an individual predictor (column 3). It can also be reported from column 5 that the variables, PP, CE, PA, and TL (listed in descending order of influence on innovation) have an influence on IIB, while PP, PA, CE, and TL (listed in descending order of influence on innovation) have an influence on IWB. In the case of IIB, PA was the third most important predictor and, in the case of IWB, the second most important predictor. It is essential to note that PA was a predictor of both measures of innovation. Interestingly, all the independent variables were included in the models presented, suggesting that they are indeed antecedents to innovation.

## **5 Discussion**

Following from the literature review, it is clear that the PA-innovation link focuses mostly on Western samples. The sample presented in this study addresses this concern and the research addresses the aim of the study within the South African context. Furthermore, the respondents represented the South African workforce well, in as far as gender, race, and age were concerned. In addition, the biographical data was closely aligned with information presented in the Quarterly Labour Force Survey publication (Statistics South Africa, 2016).

Previous studies on the link between PA and innovation have also been criticised for focusing only on a single-company or on a single-industry with relatively small samples. This research makes use of a large sample, across multiple organisations in different sectors. The study empirically investigated 3 180 employees drawn from 53 companies within the private sector, parastatals, and government departments.

Previous research on the PA-innovation link has also been criticised for focusing only on PA as a free-standing construct, and not integrating it with other possible antecedents. This study addresses this issue by also including several other measures, namely leadership style, PP, and entrepreneurial climate, in the model.

The results showed that the relationship between PA (as a total score) and individual innovation, although statistically significant, was practically insignificant. The relationship between all items of PA and innovation was also statistically significant and practically insignificant. The relationship when using all items, however, was larger than when using the total score. This may suggest that the items are better predictors of innovation.

It is also clear that considering PA as a universal predictor of innovation across organisations does not lend support for PA as one of the antecedents to innovation. This is inconsistent with the research conducted by Aktharsha and Sengottuvel (2016), Choi, Moon, and Ko (2013), Dalota and Perju (2010) and Runfeng (2011). The PA-innovation relationship may be found in single organisations, rather than across organisations.

Focusing on the individual PA items, the results showed that some were more effective in predicting innovation than others. These items had a common theme - that of a clear link with organisational performance and communication or negotiation between management and the employee. For these themes, it may be deduced that these elements of PA are the primary drivers of innovation. Therefore, performance targets that are set and recorded on the PA system have the strongest influence on IIB, while managers who negotiate each of their team members' specific, measurable and stretching performance targets are the largest driver of IWB.

The variables, PP, CE, PA, and TL (listed in descending order of influence on innovation) influence IIB, while PP, PA, CE, and TL (listed in descending order of influence on innovation) influence IWB. In the case of IIB, PA was the third most important predictor and, in the case of IWB, the second most important predictor. It can be seen that PA, amongst other variables, is responsible for innovation – a conclusion that aligns with the findings of research by Bal, Bozkurt and Ertemsir (2014), Jimenez-Jimenez and Sanz-Valle (2005), Mark and Akhtar (2003) and Shipton, West, Dawson, Birdi and Patterson (2006). The results also demonstrate that PA is a far more important driver of innovation than, for example, TL is. PP has the most significant influence on IIB and IWB compared to the other variables. This places PA as an antecedent to innovation within the context of other variables.

## **6 Theoretical implications**

The research contributes to academic literature and theory on PA and innovation within the South African context, where no previous study of this nature has been conducted. This research has led to an increase in knowledge and discovery on the PA-innovation link. The research demonstrates that PA is a driver of innovation, but that it accounts for less than 10% of the variance in innovation. The aspects of PA which drive innovation have been specified. Furthermore, the importance of PA overall - as well as the relative importance of PA as an antecedent to innovation in the workplace - has been established. It has also been established that there are other variables that have a far more significant influence on innovation than PA does.

## **7 Practical implications**

The outcomes or results of the study has the potential to benefit all business stakeholders and may also assist managers and human resource practitioners to identify which PA practices enhance innovation. Moreover, the identified practices will allow human resource practitioners and managers to enrich their current PA processes in an effort to enhance innovation. In addition, the magnitude of the relationship has been quantified and human resource practitioners are alerted to the relative role of PA as a predictor of innovation. Although the study has provided evidence that PA has a role to play in influencing innovation within an organisation, it is clear that PP is central to innovation, and that TL has a less significant role to play. Focusing on the recruitment of proactive employees, rather than on managing them with TL practices, may be at the root of innovation in organisations. This knowledge would help managers improve innovation behaviour and thereby increase competitive advantage.

## **8 Limitations of the study**

The present study was subject to a few limitations that are worth mentioning. The first limitation is that the study design is cross-sectional in nature. Cross-sectional studies are conducted at a specific point in time and provide no indication of the sequence of events, thus making it impossible to infer causality from the study (Levin, 2006). However, a longitudinal or experimental design is suggested to overcome the limitations of a cross-sectional study. The second limitation was the exclusive use of respondents' perceptions in this study. The results may

have been more explanatory had managers been included in the reporting or had organisational statistics, such as registered patents, been used. Multi-source and multi-method research is suggested. A third limitation was that the respondents represented the South African workforce as a single unit. It can be expected that there may be differences per organisation and also sector-wide, and research in this regard is therefore recommended.

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## **Appendix C: Empirical article two for objective five**

In this article, the effect of PA on innovation was investigated by presenting empirical evidence on the link between PA and innovation (and its relative influence, given non-human resource antecedents), across organisational contexts. The researcher addresses the fifth research objective via an empirical study in the form of the article below.

### **PERFORMANCE APPRAISAL AS A CONTEXTUAL PREDICTOR OF INNOVATION: AN ANALYSIS OF ITS IMPORTANCE IN DIFFERENT ORGANISATIONS**

#### **Abstract**

Extensive literature suggests that innovation is quite important to an organisation's continued existence in the current economic climate. Also, important to note from the literature is that performance appraisal (PA) is an antecedent to innovation. However, the absolute importance of PA, as well as PA as an antecedent amongst other antecedents to innovation, is not satisfactorily defined – particularly so when investigating these phenomenon in different organisations. This study will contextualise the PA-innovation relationship within the South African environment, as well as clarify the specific drivers of innovation within organisations. In South Africa, PA is often not used as a basis for paying out performance bonuses, which makes this country a particularly interesting case. In this study, the PA-innovation relationship was investigated across 53 organisations, employing a cross-sectional survey design focusing on quantitative data. The hypothesis of the PA-innovation relationship being universalistic, contingent, or configurational, was investigated. PA, proactive personality, transformational leadership, corporate entrepreneurship, and innovation were measured across the organisations. A significant PA-innovation link was established in approximately 30% of the organisations. When the selected antecedents were included, PA was the least important driver of innovation, with proactive personality having the most significant influence on innovation (in almost 90% of the organisations). Evidence supportive of the universalistic perspective was not present in the correlative or regression analysis. There is some support for the configurational perspective.

However, the configurational fit could not be fully accepted as it is not applicable to all organisations. The study has achieved the aim of establishing the absolute importance of PA, as well as its significance as an antecedent to innovation, in different South African organisations. The results of this research might be of significance to all stakeholders and may also enable human resource professionals and supervisors to concentrate on suitable, evidence-based information when trying to enhance innovation at the organisational level.

**Keywords:** Corporate entrepreneurship, human resource models, innovation, performance appraisal, proactive personality, South Africa, transformational leadership

## 1 Background

A widespread of literature indicates that, in the present economic climate, innovation is critical to an organisation's sustained success (Abbaspour, 2015; Aryanto, Fontana, & Afiff, 2015; Ceylan, 2013; Dalota, & Perju, 2010; Potocnik, & Anderson, 2012; Runfeng, 2011). Abbaspour (2015) and Le Bas and Lauzikas (2009) argue that innovation is a significant factor influencing organisational performance and that it is compulsory for every organisation. In addition, Akman and Yilmaz (2008) and Ling and Nasuridin (2011) recognise innovation as a fundamental success factor in a progressively competitive international business setting. Competitive advantage and growth can be attained and sustained only through periodic or continuous innovation (Abbaspour, 2015; Gil-Marques, & Moreno-Luzon, 2013; Hurley, & Hult, 1998; Le Bas, & Lauzikas, 2009; Matthew, 2014; Muller, Valikangas, & Merlyn, 2005). By the same token, Ryakhovskaya, Gruzina, Arsenova, Linder, and Pukhova (2015) and Wu, Sears, Coberley and Pope (2016) contend that innovation, along with other variables such as collaboration, are viewed as sources of competitive advantage.

There are many studies in the literature that examine the different constructs that influence innovation. Some of these constructs are: organisational climate (Michaelis, Stegmaier, & Sonntag, 2010; Shanker, Bhunugopan, & Fish, 2012), organisational design (Michaelis, Stegmaier, & Sonntag, 2010), organisational culture (Michaelis, Stegmaier, & Sonntag, 2010; Tipu, Ryan, & Fantazy, 2012), leadership (Al-Husseini, & Elbeltagi, 2012; García-Morales,

Matías-Reche, & Hurtado-Torres, 2008; Hu, Gu, & Chen, 2012; Khan, Aslam, & Riaz, 2012; Paulsen, Callan, Ayoko, & Saunders, 2013; Tipu, Ryan, & Fantazy, 2012), performance appraisal (PA) (Aktharsha, & Sengottuvel, 2016; Choi, Moon, & Ko, 2013; Dalota, & Perju, 2010; Ling, & Nasurdin, 2011; Runfeng, 2011), proactive personality (PP) (Seibert, Kraimer, & Crant, 2001; Tai, & Mai, 2016; Zhang, Li, & Yu, 2014), and other human resource practices (HRPs) (Aktharsha, & Sengottuvel, 2016; Dalota, & Perju, 2010; Kong, Chadee, & Raman, 2013; Matthew, 2014).

PA is responsible for innovation, as indicated in the preceding paragraph. This assertion is also supported by the work of Dalota and Perju (2010), as well as Shipton, West, Dawson, Birdi, and Patterson (2006) who found that PA, among other individual HRPs, contributes to innovation. It is interesting to note that PA may also have an indirect effect on innovation. Aktharsha and Sengottuvel (2016), for example, suggest that PA is a significant predictor of knowledge sharing behaviour. These researchers also found that knowledge sharing behaviour plays an important role in predicting innovation (Aktharsha, & Sengottuvel, 2016).

Evidence of empirical research on the link between PA and innovation is limited. Matoochund (2019) reports that, in general, PA contributes between 3.8% and 5.7% to the variance in innovation. In considering the coefficient of determination in other studies, we find – Bal, Bozkurt and Ertemsir's (2014) study to have revealed that 24.9% of the variance in innovation can be declared by PA. Shipton, West, Dawson, Birdi, and Patterson (2006), meanwhile, report that PA explains 18.5% of the variance in product innovation and 15.2% of the variance in innovation in technical systems. In addition, Jimenez-Jimenez and Sanz-Valle (2005) report that 4.2% of the variance in innovation is contributed by PA.

Research on the link between PA and innovation is often flawed as it is frequently based on data drawn from organisations pooled together as a single unit. This means that the organisations concerned are not compared and that statistics per organisation are not provided. The research by Bal, Bozkurt, and Ertemsir (2014) made use of a pooled sample of 48 organisations within Turkey and drawn from various sectors, such as health, media, textile, retail, and banking. Shipton, West, Dawson, Birdi and Patterson's (2006) study investigated a pooled sample of 22 organisations within the United Kingdom and drawn from the manufacturing sector only. Also, with reference to samples, Jimenez-Jimenez and Sanz-Valle's (2005) study involves a pooled sample of 376



organisations from the Murcia region in Spain. Mark and Akhtar's (2003) research, meanwhile, makes use of a pooled sample of 63 publicly listed organisations. The research by Choi, Moon, and Ko (2013) makes use of a global South Korean organisation that consists of 50 divisions with 177 000 employees active in various sectors for example, chemical, global business, electronics, telecommunications, and mobile communications. For the current study, 53 organisations were selected as the sample, and the study is intended to explore the PA-innovation relationship across the various organisations.

Given the significance of innovation, as highlighted previously, the examination of the PA and innovation relationship becomes a particularly pressing problem for organisations from an economic point of view, this due to the vast resources dedicated to PAs (Grote, 1996; Khoury, & Analoui, 2004; Nickols, 2007). In an article by Nickols (2007), the author provides an example of an organisation in which the annual costs of PA were conservatively estimated to be close to 100 million US dollars. Furthermore, Nickols (2007) and Scullen (2011) suggest that there are costs associated with PAs other than time and money, such as reduced employee productivity, employee disappointment, employee stress, employee depression, reduced employee morale, and diminishing motivation. These costs can impact negatively on an organisation's bottom line when the appropriate value is not being derived from an organisation's PA system (Khoury, & Analoui, 2004; Nickols, 2007; Scullen, 2011). The costs associated with undertaking PAs may be particularly high if the assessments are not employed for their usual intended purposes, as is the case in some South African organisations, where they are not utilised to determine performance bonuses.

## **1.1 Research problem**

A widespread of literature indicates that, in the present economic climate, innovation is critical to an organisation's sustained success. Furthermore, the literature makes it clear that PA is an antecedent to innovation. However, suitable knowledge of the absolute importance of PA, as well as of PA as an antecedent amongst other antecedents to innovation, is not well-defined, particularly so when investigating these phenomenon in different organisations. This dearth of evidence concerning the PA-innovation link may result in the inapt allocation of resources to PA and, in

turn, may hinder the organisation's success. Added to this, practitioners might not understand the differences that may exist across organisations.

## **1.2 Aim**

This study aims to investigate the significance of PA as an antecedent to innovation in the workplace, focusing both on PA as a single construct and on the absolute importance of PA as a driver of innovation, as compared to other antecedents of innovation, within organisations.

## **2 Literature review**

Researchers and practitioners regularly disagree about the PA literature. However, what is evident, is that there is an abundance of interest in PA on the part of both practitioners and researchers. Research suggests that, in some organisations, PA is employed to reduce inefficiency and increase performance, resulting in superior organisational results (Ayers, 2013; DeNisi, & Pritchard, 2006; Esu, & Inyang, 2009; Rubin, 2011). According to the article by Ahmed, Mohammad and Islam (2013), in the current economic climate, PA plays a critical role with regard to progressive improvement in organisations. On the other hand, Boswell and Boudreau (2000), Downs (1990), Judge and Ferris (1993), as well as Walsh (2003), suggest that PA is one of the most important HRPs utilised in organisations. Virtually all organisations worldwide utilise some sort of PA system (DeNisi, & Pritchard, 2006; Grote, 1996; Kirner, 2006; Longenecker, & Goff, 1992; Mitchell, 2010; Nankervis, & Compton, 2006) and, for this reason human resource professionals and researchers alike have devoted close to a century to PA research (DeNisi, & Pritchard, 2006; Siaguru, 2011).

Considering the particular uses of PA, numerous studies (Blankenship, 2002; DeNisi, & Pritchard, 2006; Espinilla, de Andrés, Martínez, & Martínez, 2013; Grobler, Wörnich, Carrell, Elbert, & Hatfield, 2011; Kirner, 2006; Swiercz, Bryan, Eagle, Bizzotto, & Renn, 2012) suggest that PAs are employed for a variety of reasons such as decision making with regard to compensation, as well as promotions, retention, and developmental needs and that, if conducted effectively, they can significantly contribute to employee motivation and satisfaction. Kirner (2006) indicates that, initially, PA had only one purpose – that of evaluating merit – but that, over the decades it has evolved to include a multitude of purposes, namely enhancement of

both employee as well as organisational results and effectiveness, coaching and development, pay and staffing decisions, and legal documentation. PAs are crucial to employee development (Grobler, Wörnich, Carrell, Elbert, & Hatfield, 2011; Venclova, Salkova, & Kolackova, 2013). Kondrasuk (2011), for example, suggests that PA enables an organisation to be more efficient and also keeps the workforce motivated. PAs integrate the features of human resource management that are intended to advance the effectiveness and efficiency of both the organisation and the employee (Khoury, & Analoui, 2004; Kirner, 2006; Longenecker, & Goff, 1992). Furthermore, Khan (2013) and Kirner (2006) argue that the PA system is a significant part of the performance management process which links company goals and daily performance achievements, as well as individual development and rewards.

Research by Jimenez-Jimenez and Sanz-Valle (2005), and Mark and Akhtar (2003), empirically investigated and established a relationship between PA and innovation. These researchers also acknowledge that PA is an important HRP responsible for innovation (Jimenez-Jimenez, & Sanz-Valle, 2005; Mark, & Akhtar, 2003). Several studies (Bal, Bozkurt, & Ertemsir, 2014; Jimenez-Jimenez, & Sanz-Valle, 2005; Shipton, West, Dawson, Birdi, & Patterson, 2006) theorise that the PA-innovation relationship is positive and significant. The article by Chen and Huang (2009) support the position that organisations with extremely effective PA systems attain greater innovation outcomes. On the other hand, PA that is dedicated largely to employee development support innovation (Shipton, West, Dawson, Birdi, & Patterson, 2006).

It is, however, not clear whether PA is an effective driver of innovation in all organisations. The universalistic, contingency, and configurational perspectives are the three major approaches to understanding human resource management (Delery, & Doty, 1996; Hamid, 2013; Katou, & Budhwar, 2007; Nigam, Nongmaithem, Sharma, & Tripathi, 2011) and they may be utilised to describe the relationship between PA and innovation, given the context of specific organisations. These perspectives are presented below:

- The universalistic perspective posits that some HRPs are generally superior to others in all organisations under any conditions (Delery, & Doty, 1996; Jeong, & Choi, 2016; Katou, 2008; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009). This implies that organisations that adopt these best practices achieve superior results (Delery, &

Doty, 1996; Jeong, & Choi, 2016; Katou, 2008; Steyn, 2012) and that strategy and human resource policies are as free as each other in influencing organisational performance (Claus, 2003; Huselid, 1995; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009; Pfeffer, 1994).

- The contingency perspective theorises that the choice of a certain set of human resource policies or practices is reliant on strategy (Katou, 2008; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009). Gomez-Mejia and Balkin (1992), Katou and Budhwar (2007), Schuler and Jackson (1987), and Youndt, Snell, Dean and Lepak (1996) suggest that there needs to be a fit between organisational strategy and human resource strategy to influence organisational performance. The utilisation of HRPs within an organisation could encourage employees to generate innovative ideas that promote innovation (Dalota, & Perju, 2010). In a study by Katou (2008), the researcher proposes that a contingency perspective may mean that an innovation strategy determines human resource policies – or that human resource policy determines an innovation strategy for an organisation. Meanwhile, Dalota and Perju (2010) argue that the choice of innovation strategy is dependent on PA, rewards, career opportunities, and employee participation. PA, recruitment, and incentives constitute a bundle of HRPs for organisations following an innovation strategy (Dalota, & Perju, 2010; Jimenez-Jimenez, & Sanz-Valle, 2005).
- The configurational perspective, according to Jeong and Choi (2016) and Lengnick-Hall, Lengnick-Hall, Andrade, and Drake (2009), theorises that groupings of certain HRPs, rather than individual HRPs, increase organisational performance as some practices reinforce one another. This implies that there are particular combinations of HRPs that are the most suitable for improving organisational performance. Delery and Doty (1996) indicate that, for the configurational perspective, there should be both internal consistency of HRPs (horizontal fit) and congruence of human resource systems and other organisational features (vertical fit).

Considering the theoretical perspectives, evidence of the PA-innovation relationship being universalistic would require that PA uniformly correlates with innovation in all organisations. Should the relationship be a good fit for the configurational perspective, it might be expected that

the results will show specific patterns in the way in which PA correlates with innovation across organisations. Unfortunately, evidence of a contingency perspective would require data on the strategic positions of the different organisations to have been collected, but this was not done. This perspective could, therefore, not be explored.

It is important to note that many other variables are associated with innovation, such as leadership styles, organisational climate, and personal attributes. When studying the relationship between leadership and innovation, researchers have concentrated mostly on transformational leadership (TL) rather than on transactional leadership (Sethibe, & Steyn, 2015). According to Al-Husseini and Elbeltagi (2012), Hu, Gu and Chen (2012), Khan, Aslam, and Riaz (2012), Paulsen, Callan, Ayoko, and Saunders (2013), Sethibe and Steyn (2016), and Tipu, Ryan, and Fantasy (2012), TL is significantly and positively related to innovation. Conversely, Sethibe and Steyn (2016) found no direct link between transactional leadership and innovation. Organisational climate also seems to be influential in fostering innovation. Michaelis, Stegmaier, and Sonntag (2010), Nusair (2013), Panuwatwanich, Stewart, and Mohamed (2008), and Shanker, Bhunugopan, and Fish (2012) claim that organisational climate is a key antecedent to innovation. Research by, Björkdahl and Börjesson (2011), Lin and Liu (2012), Michaelis, Stegmaier, and Sonntag (2010), Shanker, Bhunugopan, and Fish (2012), and Zhang and Begley (2011), has shown that there is a significant correlation between organisational climate and innovation. At an individual level, personal attributes also coincide with innovation in organisations. It is interesting to note that PP positively and significantly correlates to innovative behaviour (Seibert, Kraimer, & Crant, 2001; Tai, & Mai, 2016; Zhang, Li, & Yu, 2014). Indeed, many scholars posit that PP is the chief determinant of innovative behaviour (Fuller, & Marler, 2009; Parker, Williams, & Turner, 2006; Seibert, Kraimer, & Crant, 2001; Thomas, Whitman, & Viswesvaran, 2010). It is evident from the literature that TL, organisational climate and PP are significant predictors of innovation. It would, therefore, in the study of PA, be interesting to consider the relative importance of PA given these other antecedents to innovation.

### **3 Method**

The research approach, measuring instruments and statistical analysis are presented below.

### **3.1 Research approach**

In this study, a cross-sectional survey design, which concentrated on quantitative data, was utilised. Quantitative research design easily permits the establishment of relationships between variables and is a good fit for this sort of research (Bryman, 2012; Punch, 1998). Secondary data was used for the statistical analysis in this article.

The data used in this study was collected as part of a research project led by the second author of the study. Only South African organisations formed part of the study. The sample for the organisations was not random, but rather a convenience sample. Once the organisations had been identified, respondents were selected at random from the organisation's employee records. Ultimately, data from 3 180 employees employed by 53 organisations in South Africa was captured. The data was collected in accordance with the ethics guidelines of the University of South Africa (UNISA), and approval was obtained from the UNISA Research Ethics Review Committee to utilise the data as secondary data.

### **3.2 Measuring instruments**

The quality of a Performance Appraisal system questionnaire (Steyn, 2010), the Individual Innovative Behaviour questionnaire (Kleysen, & Street, 2001), the Innovative Work Behaviour questionnaire (De Jong, & Den Hartog, 2010), the Proactive Personality scale (Bateman, & Crant, 1993), a part of the Leadership scale, specifically the Transformational Leadership scale portion (Wolins, 2012), and the brief Corporate Entrepreneurship assessment instrument (Strydom, 2013) were the instruments used for this study. In this study, two measures of individual innovation in the workplace were assessed, namely IIB and IWB.

- The quality of a PA system questionnaire, developed by Steyn (2010), was utilised to measure the perceived effectiveness of PA systems in organisations. This questionnaire is based on human resource management literature (Cascio, 2010; Grobler, Wörnich, Carrell, Elbert, & Hatfield, 2006; Noe, Hollenbeck, Gerhart, & Wright, 2008; Snell, & Bohlander, 2007; Swanepoel, Erasmus, & Schenk, 2008) which describes the characteristics of an effective PA system. Grobler, Wörnich, Carrell, Elbert, and Hatfield (2006) provide a full list of necessities for an effective PA system, and the

majority of the literature was therefore adapted from these authors. The PA instrument is comprised of 18 statements designed to elicit the respondent's views on the PA process. Respondents were invited to indicate their views for each item on a five-point scale as follows: 1 (Absolutely false – this is true in +/-10% of all cases), 2 (Somewhat false – this is true in +/-35% of all cases), 3 (Neither true nor false), 4 (Somewhat true – this is true in +/-75% of all cases), and 5 (Absolutely true – this is true in +/-90% of all cases). The lowest score that could be obtained was 18, and the highest was 90. A high score would be indicative that a traditionally defined PA system was in place and operating effectively, while a low score would show that the respondents were convinced that a traditionally defined PA system was not operating in their organisation (Steyn, 2010). Furthermore, Steyn (2010) reports internal consistency to have a Cronbach alpha of 0.84 and significant correlations (in the expected direction) with results such as turnover intentions ( $R=0.311$ ;  $p<0.01$ ), job satisfaction ( $R=0.281$ ;  $p<0.01$ ) and employee engagement ( $R=0.318$ ;  $p<0.01$ ).

- The Individual Innovative Behaviour (IIB) questionnaire by Kleysen and Street (2001) was chosen to quantify IIB. According to Kleysen and Street (2001), there is a lack of studies on a multi-dimensional measure of IIB. The IIB questionnaire consists of 14 questions, randomly itemised to avoid possible response order bias. Respondents were requested to indicate their views for each question on a six-point scale ranging from 1 (Never) to 6 (Always). The lowest score that could be obtained was 14 and the highest 84. Each of the 14 items was prefaced with the following question: “In your current job, how often do you...” (Kleysen, & Street, 2001: 288). Kleysen and Street (2001) report that a measure of inter-correlation between the 14 questions resulted in a Cronbach alpha of 0.95 and good construct validity. All five factors are strongly correlated with each other, with the highest correlation being between application and formative investigation ( $R=0.81$ ;  $p<0.01$ ) and the lowest between championing and generativity ( $R=0.68$ ;  $p<0.01$ ). Kleysen and Street (2001) thus suggest that the 14 items can be combined into a single measure of innovative behaviour, and this was done for this research.
- The Innovative Work Behaviour (IWB) questionnaire from De Jong and Den Hartog (2010) was additionally selected as it measures IWB. The IWB questionnaire consists of 10 questions. The existing IWB questionnaire had to be modified for the

purposes of this study. No measurement scale was provided in the De Jong and Den Hartog (2010) article. A scale was therefore introduced, ranging from (0) Never to (6) Always. The lowest score that could be obtained was 0 and the highest 60. The following is a question from the original IWB questionnaire: “How often does this employee...pay attention to issues that are not part of his daily work?” (De Jong, & Den Hartog, 2010: 29). This format did not suit the study, which emphasises the views of individuals concerning their IWB. All ten items of the questionnaire were thus amended to begin “As an employee how often do you...” instead of “How often does this employee...”. De Jong and Den Hartog (2010) report that the instrument is adequately reliable (Cronbach alpha>0.7). According to De Jong and Den Hartog (2010), there is clear evidence that employee’s innovation outputs ( $R=0.35$ ;  $p<0.01$ ), participative leadership ( $R=0.25$ ;  $p<0.01$ ) and external work contacts ( $R=0.27$ ;  $p<0.01$ ) correlate with IWB and this points to good criterion validity. The adapted version of the instrument was used for this research.

- The Proactive Personality (PP) scale, created by Bateman and Crant (1993), includes 17 items intended to elicit the respondent’s perceptions of proactive behaviour. Respondents were invited to indicate their views for each statement on a five-point scale ranging from 0 to 4 as follows: 0 (Strongly disagree), 1 (Disagree), 2 (Not sure), 3 (Agree), and 4 (Strongly agree). The highest score that could be obtained from the questionnaire was 68 and the lowest zero. Bateman and Crant (1993) report a Cronbach alpha of 0.89, implying good internal reliability of the PP scale. By the same token, Bateman and Crant (1993) claim that the proactive scale was significantly correlated to all three criterion variables, which are indicative of criterion validity, while discriminant validity was exposed between the proactive scale and intelligence, neuroticism, agreeableness, openness, private self-consciousness, and locus of control.
- The Leadership scale questionnaire established by Avolio, Bass, and Jung (1999) is employed to measure transactional and transformational leadership (TL) and comprises 21 statements. The emphasis of this portion of the research will be on TL rather than on transactional leadership, as Sethibe and Steyn (2016) show that there is no direct relationship between transactional leadership and innovation, whereas TL is positively and significantly linked to innovation. The TL scale section of the questionnaire contains 12



statements, as described by Wolins (2012), and only this portion was utilised for this study. Respondents were requested to indicate their views for each item on a five-point scale ranging from 0 (Not at all) to 4 (Frequently, if not always). The maximum score on the TL scale portion of the questionnaire would be 48 and the minimum zero. Strydom (2013) reports reliability as having a Cronbach alpha of 0.87, while Sethibe and Steyn (2016) report a Cronbach alpha of 0.94 for the TL scale portion. In a study by Antonakis, Avolio, and Sivasubramanian (2003), these authors' results indicate that the Leadership scale questionnaire is both reliable and valid.

- The brief corporate entrepreneurship (CE) assessment instrument by Strydom (2013) was selected to assess CE climate. The CE instrument contains 20 statements and respondents were invited to indicate their perceptions in respect of each item on a scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). The maximum score on the CE instrument would be 100 and the minimum 20. A high score would indicate that respondents are of the view that there are high levels of entrepreneurial support in the organisation, while a low score would be indicative of low support for entrepreneurship (Strydom, 2013). Strydom (2013) reports good reliability (Cronbach alpha=0.810) for the total CE instrument, while also reporting Cronbach alphas of 0.731, 0.825, 0.740, 0.689, and 0.574 for the subsections management support, work discretion, rewards, time available, and organisation boundaries respectively. Outcomes with regard to the organisation boundaries subsection should be viewed with some caution, particularly due to its Cronbach alpha being below 0.6. Entrepreneurial spirit intensifies with a rise in employee engagement and organisational commitment, as well as job satisfaction, and this is indicative of concurrent validity (Strydom, 2013). Furthermore, Strydom (2013) reports that, when the factor analysis was concluded, all items loaded as expected, with values above 0.5 suggesting factorial validity for the CE instrument.

### **3.3 Statistical analysis**

All statistical analysis for this study was performed with the aid of the Statistical Package for Social Science (SPSS). The first step was to calculate frequencies in order to provide demographic characteristics of respondents. Then, the reliability of the instruments was confirmed by

calculating the Cronbach alphas for all six instruments. Following the recommendations of Bhatnagar, Kim, and Many (2014), as well as Hair, Black, Babin, and Anderson (2009), the reliability of the instruments was taken to be satisfactory when the Cronbach alpha was above 0.6.

Correlation coefficients (for binary relationships) were also calculated between PA as a single construct and for innovation behaviour per organisation. To determine the magnitude of the relationship between the variables, Pearson correlations (2-tailed) were used. These correlations were deemed statistically significant at the 0.01 level. Cohen's (1988) guidelines for the social sciences to calculate the practical significance of the Cronbach alphas are as follows: R above 0.5 is considered "large", R above 0.3 but below 0.5 is considered "medium", and R above 0.1 but below 0.3 is considered "small".

Three regression analyses were then conducted at the organisational level. The first of these was performed to calculate how the 18 items of PA predict IIB and IWB. This was followed by identifying which items of PA significantly and uniquely predict IIB and IWB. Lastly, an analysis was performed to test how PA (as a total score) and the control variables PP, CE and TL can be regressed to predict the dependent variables, IIB and IWB. The "Enter" option in SPSS was selected for the regression analysis where all the individual PA items are regressed to predict individual innovation. In order to identify individual PA items which contribute uniquely and significantly to predicting individual innovation, "Stepwise" regressions were performed using the "Stepwise" option in SPSS. Finally, to assess the importance of PA, compared to other organisational variables, PA and the control variables PP, CE and TL were regressed to predict innovation. Once again, the "Stepwise" procedure was followed so as to identify those variables which uniquely and significantly predict innovation.

The coefficient of determination or percentage variance in innovation was computed by multiplying the  $R^2$  values by 100 (Holcomb, 2017; Pallant, 2013).

All organisations exhibiting similar connections between PA and innovation and with little variation between organisations would provide confirmation of a universalistic model. Additionally, another sign of the universalistic perspective would be whether  $R^2$  was significant for the PA-innovation relationship in all organisations. The same PA items should relate to

innovation across organisations, and the relative contribution of antecedents should be rated similarly across organisations.

Finding unique sequences in which PA relates to innovation would provide confirmation of a configurational model. Validation of a configurational model would be seen if specific combinations of items regularly predict innovation or should patterns of antecedents predict innovation significantly.

## **4 Results**

### **4.1 Demographic characteristics of respondents**

In this study, a total of 3 180 workers drawn from 53 organisations in South Africa, representing the private sector, parastatals, and government departments constituted the sample population.

**Gender:** The respondents were grouped into two gender groups. The 2016 Quarterly Labour Force Survey specifies that the gender demographic across South Africa as a whole is virtually equally distributed (Statistics South Africa 2016), and this is closely aligned to the gender distribution in this study. A total of 1 771 (55.7%) respondents noted their gender as male and 1 372 (43.1%) as female, while the missing data amounted to 37 (1.2%).

**Race:** In this study, respondents were categorised into four races, and this data is closely aligned to the Quarterly Labour Force Survey in the sense that, in the larger South African context, Blacks make up the largest workforce group, followed by Whites, Coloureds, and Asians in descending order (Statistics South Africa 2016). A total of 263 (8.3%) respondents in this study specified Asian, 1 830 (57.5%) Black, 263 (8.3%) Coloured, and 787 (24.7%) White, while the missing data is 37 (1.2%).

**Age:** The 2016 Quarterly Labour Force Survey indicates that the age of the South African workforce ranges from 15 to 64 years (Statistics South Africa, 2016), and this is closely aligned with the respondents in this analysis whose ages range from 20 to 72 years, with a mean of 37.81 and a standard deviation of 9.10.

**Educational qualifications:** A total of 934 (29.4%) respondents hold a bachelor's degree or higher, 1 274 (40.1%) hold a diploma, 789 (24.8%) have matric, and 143 (4.5%) have less than 12 years of schooling, while the missing data is 40 (1.3%).

**Management and tenure:** Respondents in management positions totalled 1 156 (36.4%), and those in non-management positions represented 1 983 (62.4%), while the missing data was 41 (1.3%). As far as tenure at their existing organisation is concerned, this ranged from one month to 42 years, with a mean of 8.49 and a standard deviation of 7.45.

**Job categorisation:** In this study, respondents were categorised into five job classes. A total of 72 (2.3%) respondents form part of an unskilled and defined decision-making group, 626 (19.7%) form part of a semi-skilled and discretionary decision-making group, 1 359 (42.7%) are skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents, 893 (28.1%) are professionally qualified, experienced specialists and middle management, and 163 (5.1%) are members of top or senior management, while the missing data is 67 (2.1%). Respondents in core businesses totalled 1 432 (45.0%), and those in support businesses represented 1 730 (54.4%), while the missing data was 18 (0.6%).

**Economic sectors:** In this research, the companies were grouped into the three sectors already alluded to. A total of 1 981 (62.3%) companies fall within the private sector, 480 (15.1%) are parastatal, and 719 (22.6%) are government departments, for example, the Department of Trade and Industry, the Department of Tourism, and so on.

From the aforementioned demographic characteristics, it is apparent that the respondents represent a broad cross-section of the South African working populace.

## **4.2 Reliability**

Reliability was calculated for the IIB, as well as the IWB questionnaire and the Cronbach alphas were 0.951 and 0.893 respectively. The internal consistency for PA resulted in a Cronbach alpha of 0.930. Reliability for the 17-item PP scale was 0.843 and, for the 20-item CE instrument, the Cronbach alpha was 0.762. Lastly, for the 12-item TL scale, the Cronbach alpha was 0.946. All six instruments report a Cronbach alpha above 0.6, implying that the reliability is adequate for each instrument.

### 4.3 Validity

An investigation of the interactions between the dependent variables (IIB and IWB) demonstrate that convergent validity is apparent since the IIB questionnaire correlated significantly (with a significant effect) with the IWB survey ( $R=0.683$ ;  $p<0.01$ ). The link between the independent variable (PA) and the innovation variables also offers support for divergent validity. The IIB survey correlated with the PA questionnaire ( $R=0.196$ ;  $p<0.01$ ), and the IWB survey correlated with the PA questionnaire ( $R=0.239$ ;  $p<0.01$ ). These correlations were not of practical significance, indicating that the instruments measure dissimilar constructs.

Since convergent validity is a measure of variables that are related to each other (Trochim, Donnelly, & Arora, 2015), a larger correlation was anticipated between IIB and IWB than between PA and IIB or PA and IWB, as these two variables are theoretically similar. The correlations between IIB and PA, and between IWB and PA, may be low but are significant as PA may be an antecedent to IIB and IWB. The data thus offers some proof of the validity of the measures utilised.

### 4.4 Correlative and regression analysis

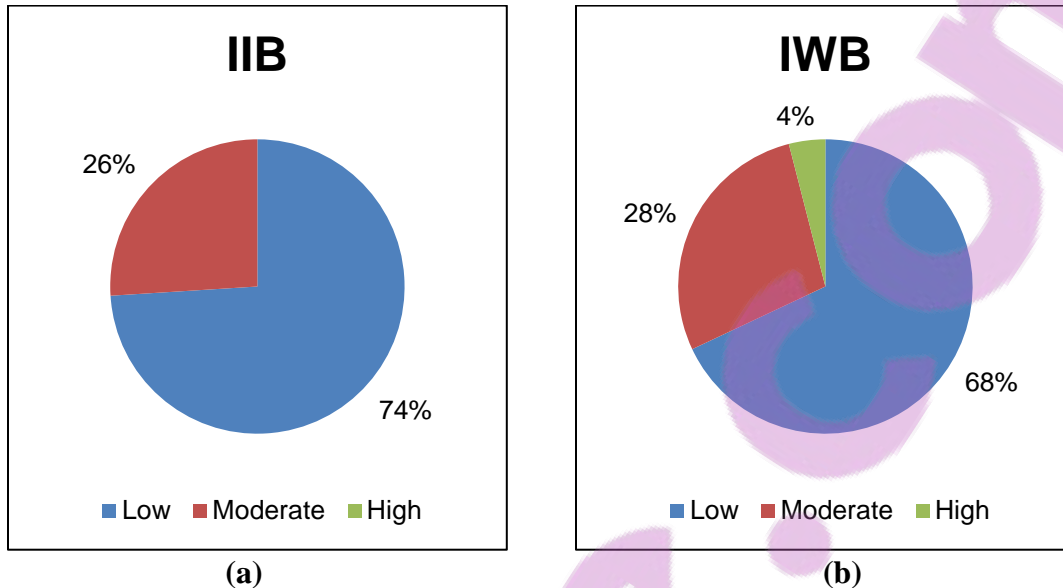
Table 1 presents four columns (Column 2 to Column 5) of results for the individual samples drawn from the 53 organisations. In column 2, the correlation coefficients are presented for PA as a single construct and innovation behaviour. The results of the regression, where all the individual PA items are regressed to predict individual innovation, are presented in column 3. Column 4 presents the results where individual PA items which contribute uniquely and significantly to predicting individual innovation are identified. The results of the regression, where PA (as a single variable) and the control variables were regressed to predict innovation, are presented in column 5. As it is not viable to present data for all 53 organisations in one table, a small section is presented here. However, Table 1 is followed by a comprehensive summary of the complete table.

**Table 1: Organisation specific correlative and regression analysis (N=60)**

Column 0	Column 1	Column 2	Column 3	Column 4	Column 5
Organisation	Measure of innovation	PA and innovation	All items of PA and innovation	All items of PA and innovation (Optimal model)	PA and innovation with other control variables
1	IIB	R=0.480; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.332; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.273; <i>p</i> <0.01 Items 7 and 14	R <sup>2</sup> <sub>adjusted</sub> =0.46; <i>p</i> <0.01 Scales: TL, PP
	IWB	R=0.479; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.285; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.302; <i>p</i> <0.01 Items 4 and 11	R <sup>2</sup> <sub>adjusted</sub> =0.29; <i>p</i> <0.01 Scales: PA, PP
4	IIB	R=0.005; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.091; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.137; <i>p</i> <0.01 Item 1	R <sup>2</sup> <sub>adjusted</sub> =0.13; <i>p</i> <0.01 Scales: PP, CE
	IWB	R=0.014; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.382; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.125; <i>p</i> <0.01 Item 1	R <sup>2</sup> <sub>adjusted</sub> =0.27; <i>p</i> <0.01 Scales: PP
52	IIB	R=0.154; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.138; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.170; <i>p</i> <0.01 Items 6 and 5	R <sup>2</sup> <sub>adjusted</sub> =0.25; <i>p</i> <0.01 Scales: PP
	IWB	R=0.232; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =-0.006; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.098; <i>p</i> <0.01 Item 5	R <sup>2</sup> <sub>adjusted</sub> =0.22; <i>p</i> <0.01 Scales: PP, PA

In column 2, depicting the relationship between PA (as a composite score) and individual innovation, measured with different instruments per organisation, it can be reported that all organisations displayed statistically significant coefficients between PA and IIB, with *p*<0.01. The average coefficient for all 53 organisations was 0.215. In total, 0/53 (0%) coefficients could be deemed as being of high practical significance (*R*>0.5), 14/53 (26%) as being of moderate practical significance (*R*>0.3) and 39/53 (74%) as being of low practical significance (*R*>0.1). Staying with column 2, but focusing now on the relationship between PA and IWB, it can be reported that all 53 organisations displayed statistically significant coefficients between PA and IWB, with *p*<0.01. The average coefficient was 0.252. In total, 2/53 (4%) coefficients could be deemed as being of high practical significance (*R*>0.5), 15/53 (28%) as being of moderate, practical significance (*R*>0.3), and 36/53 (68%) as being of low practical significance (*R*>0.1). In both, IIB and IWB

there is low practical significance in a larger proportion of the organisations. The results with regard to the practical significance of the coefficients between PA and IIB, as well as PA and IWB are presented in Figure 1, below.

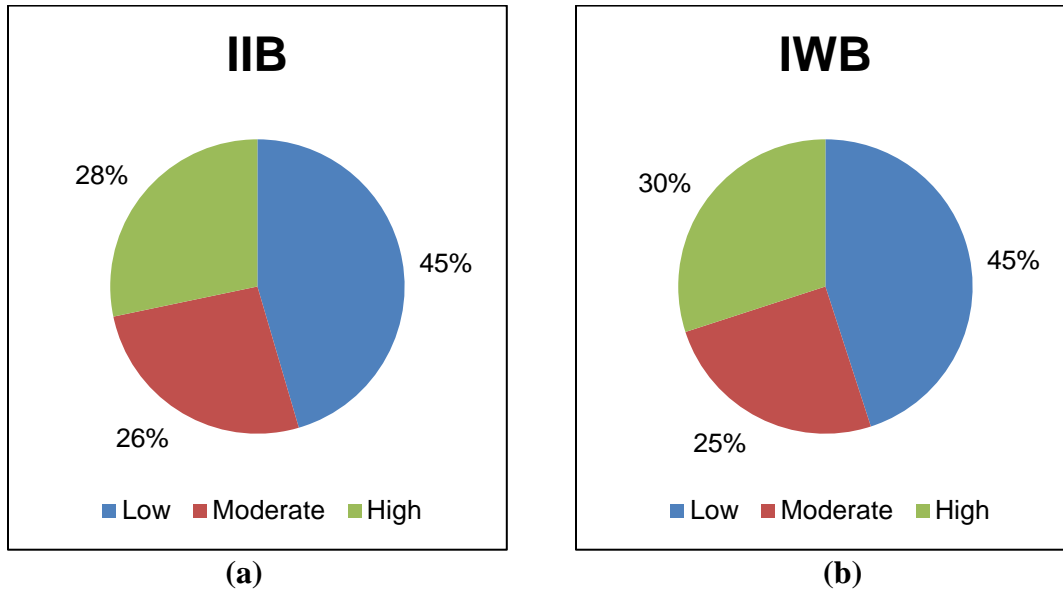


**Figure 1: Practical significance of the correlation coefficients between PA and innovation across organisations**

As seen in Figure 1, in almost three quarters ( $\frac{3}{4}$ ) of the cases, the PA total scores correlated, with a low significance, with innovation.

In column 3, the results of the regression are presented where all individual PA items of the PA instrument are regressed to predict individual innovation at the organisational level. The “Enter” option in SPSS was selected for this analysis. It can be reported that all organisations displayed statistically significant coefficients between PA and IIB, with  $p < 0.01$ . Using the regression approach yielded much higher statistically significant coefficients. The average coefficient was 0.350. In total, 15/53 (28%) of the coefficients could be deemed as being of high practical significance, 14/53 (26%) as being of moderate, practical significance and 24/53 (45%) as being of low practical significance. Continuing with column 3, now concentrating on the relationship between PA and IWB, all organisations displayed statistically significant coefficients for IWB, with  $p < 0.01$ . The average coefficient was 0.332. In total, 16/53 (30%) of the coefficients could be deemed as being of high practical significance, 13/53 (25%) as being of moderate, practical significance and 24/53 (45%) as being of low practical significance. In both IIB and IWB, there is

low practical significance in a larger proportion of the organisations. The results with regard to the practical significance of the coefficients between PA and IIB, as well as PA and IWB are presented in Figure 2, below.



**Figure 2: Practical significance of the regression coefficients between all items of PA and innovation across organisations**

As reflected in Figure 2, in 45% of the cases, the individual PA items correlated with a low significance with innovation. Whereas, in approximately 30% of the cases, the individual PA items correlated, with a high significance, with innovation.

Comparing the results in column 2 and column 3, it seems that following the regression approach, in which all the individual PA items are regressed to predict individual innovation, yielded better results than use of the correlation approach to calculate the coefficients between PA (as a single construct) and for innovation. The relationship when using all items was larger than when using PA as a single construct. This may suggest both that the items are better predictors of innovation and that a higher-level latent construct (which informs individual items rather than the total score) is responsible for the declared covariance.

“Stepwise” regressions – using the “Stepwise” option in SPSS – were performed in column 4 in order to identify individual PA items which contribute uniquely and significantly to predicting individual innovation at the organisational level. This analysis served to test a hypothesis on the relative importance of PA across organisations, but more specifically, to find patterns amongst PA



items which predict innovation. This was important so as to gain statistics on testing hypotheses on the universalistic, contingency, and configurational perspectives of human resource practices. It can be reported that all organisations displayed statistically significant coefficients between PA and IIB, with  $p < 0.01$ . The average coefficient was 0.425. This higher coefficient for column 4, when compared to column 3, was expected, as only a small number of items which contributed significantly were included, and the additional items which erode the regression coefficient were excluded. In total, 16/47 (34%) of the coefficients could be deemed as being of high practical significance, 16/47 (34%) as being of moderate practical significance and 15/47 (32%) as being of low practical significance, while there is missing data for six organisations (organisations 2, 3, 10, 34, 36, and 50). The chains for the optimal models per organisation for IIB include 23 models with one variable, 13 with two variables, seven with three variables, one with four variables, two with five variables and one with eight variables. Organisation 38 had the most variables (eight) in its optimal model. The most common items were PA1, PA2, PA8, PA9, and PA17, as these items appear in seven of the 47 models. The next most common items were PA3, PA4, PA6, PA14, and PA16, as these appear in six of the models, followed by PA5 and PA15, which appear in five of the models. PA11 was the least common variable as it appears in only one of the models. To detect evidence of sequences in items predicting innovation, the two and three-variable models were analysed further. Repeating patterns occurred in 2/13 (15%) cases with two-variable models (PA2 and PA4), and zero cases in the three-variable models. However, real patterns are still absent.

Staying with column 4, all organisations displayed statistically significant coefficients between PA and IWB, with  $p < 0.01$ . The average coefficient was 0.363. In total, 17/48 (35%) of the coefficients could be deemed as being of high practical significance, 15/48 (31%) as being of moderate practical significance, and 16/48 (33%) as being of low practical significance, while there is missing data for five organisations (organisations 29, 34, 36, 50, and 53). The chains for the optimal models per organisation for IWB include 22 models with one variable, 17 with two variables, five with three variables, two with four variables and two with six variables. Organisations 18 and 38 had the most variables (six) in their optimal models. The most common item was PA13, as this item appears in 12 of the 48 models. The next most common item was PA2, as it appears in eight of the models, followed by PA17 which appears in seven of the models. PA1 was the least common variable as it appears in only one of the models. To detect evidence of sequences in items predicting innovation, the two and three-variable models were analysed further.

Repeating patterns occurred in 2/17 (12%) cases with two-variable models (PA12 and PA13) and none in the three-variable models. However, real patterns are still absent.

In column 5, in order to assess the importance of PA, compared to other organisational variables, PA and the control variables PP, CE, and TL were regressed to predict innovation. This analysis served to test a hypothesis on the relative importance of PA across organisations, but more specifically, to find patterns amongst the different human resource variables which predict innovation. This was important so as to gain statistics on testing hypotheses on the universalistic, contingency, and configurational perspectives of human resource practices. Once again, the “Stepwise” procedure was followed so as to identify those variables which uniquely and significantly predict innovation at the organisational level. It is reported that all organisations displayed statistically significant coefficients between PA and IIB, with  $p < 0.01$ . The average coefficient was 0.415. In total, 21/49 (43%) of the coefficients could be deemed as being of high practical significance, 20/49 (41%) as being of moderate practical significance and 8/49 (16%) as being of low practical significance, while there is missing data for four organisations (organisations 2, 28, 50, and 53). The chains for IIB include 26 models with one variable, 21 with two variables and two with three variables. Organisations 8 and 15 had the most variables (three) in their models. The most common variable was PP, as this item appears in 42 of the 49 models. The next most common item was CE, as it appears in 13 of the models, followed by TL, which appears in 11 of the models, whereas PA was the least common variable as it appears in only eight of the models. To detect evidence of sequences in items predicting innovation, the two and three-variable models were analysed further. Repeating patterns occurred in all 21 cases with two-variable models (the CE and PA combination occurred twice, PA and PP occurred five times, PP and TL occurred six times, and CE and PP occurred eight times), and in both cases in three-variable models (CE, PP, and TL). However, real patterns are still absent.

Still focusing on column 5, all organisations displayed statistically significant coefficients between PA and IWB, with  $p < 0.01$ . The average coefficient was 0.529. In total, 34/53 (64%) of the coefficients could be deemed as being of high practical significance, 13/53 (25%) as being of moderate, practical significance and 6/53 (11%) as being of low practical significance. The chains for IWB include 23 models with one variable, 29 with two variables and one with three variables. Organisation 8 had the most variables (three) in its model. The most common variable was PP, as

this item appears in 46 of the 53 models. The next most common item was TL, as it appears in 17 of the models, followed by CE, which appears in 13 of the models, whereas PA was the least common variable as it appears in only eight of the models. To detect evidence of sequences in items predicting innovation, the two-variable models were analysed further. Repeating patterns occurred in all 29 cases (the PA and PP pattern occurred eight times, PP and TL occurred 13 times, and CE and PP occurred eight times). However, real patterns are still absent.

## **5 Discussion**

Earlier research on the PA and innovation relationship has been criticised for concentrating on samples of organisations pooled together as a single unit, or on single-organisation samples, implying generalisability across organisations. This study addresses that gap and reports on the PA-innovation link across different organisations. The study involved empirically investigating the PA-innovation link in each of the 53 organisations.

The results showed that the magnitude of the correlations between PA and IIB varied from 0.495 to 0.002, whereas the correlations between PA and IWB varied from 0.570 to 0.002. Considering the finding regarding the correlation between PA (as a composite score) and individual innovation, it can be concluded that a practically significant link was established in 26% of the organisations for IIB and 32% of the organisations for IWB. A statistically significant link was found in all organisations. In both, IIB and IWB there is low practical significance in a larger proportion of the organisations (approximately 75% of the cases). The research conducted by Bal, Bozkurt, and Ertemsir (2014), and Shipton, West, Dawson, Birdi, and Patterson (2006) indicates that there is a significant and positive relationship between PA and innovation.

The magnitude of the regression coefficients between PA and IIB varied from 0.873 to 0.001, whereas the regression coefficients between PA and IWB varied from 0.815 to 0.013. Considering the finding in which all the individual PA items were regressed to predict individual innovation, it can be concluded that a practically significant link was established in 28% of the organisations for IIB and 30% of the organisations for IWB. However, a statistically significant link was found in all the organisations. In a larger proportion of the organisations (approximately 45% of the cases), there is low practical significance in both, IIB and IWB. Focusing on the individual PA items at the organisational level, some were more effective in predicting innovation than others. It can be

noted that five (PA1, PA2, PA8, PA9 and PA17) out of the 18 items are common predictors of IIB and only one (PA13) is a common predictor of IWB. These elements of PA are the primary drivers of innovation. Therefore, should the PA system be the primary mechanism used to drive innovation in an organisation, the focus should be placed on these abovementioned aspects. From the items predicting IIB, this implies that the PA system should be the primary mechanism used to assess the performance of employees (PA1), that formal training on the PA system (PA2) is provided, that the PA system is not biased (PA8), that the PA system is easy to administer (PA9) and that continuous assessment of performance is being carried out regularly and recorded (PA17) and if the PA system has to influence innovation. From the PA data related to IWB, managers who negotiate each of their team member's specific, measurable and stretching performance targets (PA13) are the largest driver of innovation. However, these patterns are random.

It seems that the use of the regression approach yielded better results than the use of the correlation approach. The link was larger when using PA as a total score. This is inconsistent with the research conducted by Jimenez-Jimenez and Sanz-Valle (2005) and suggests that groups of items are better predictors of innovation than are the total scores, suggesting that a latent construct, rather than the total scores, is responsible for the declared variance. However, the seeming randomness of the items which predicted innovation discard such claims, though it was beyond the scope of this study to investigate this matter further. It may be deduced that, to some extent, certain elements of PA universally predict innovation, though in some organisations more than others.

Considering the finding regarding the importance of PA compared to other organisational variables, it can be concluded that PA was a unique and significant predictor in eight of the 53 organisations for IIB, as well as for IWB, but PA was the dominant antecedent in two of the 53 organisations for IIB, as well as for IWB. The results show that PA is the least important driver of innovation in comparison with the other variables, while PP has the most significant influence (approximately 90% in each case) on IIB and IWB within the organisations. Although PA has a less important role to play in influencing innovation within an organisation, it is evident that PP, CE and TL play a much larger role in driving innovation at the organisational level. This places the importance of PA in perspective, but also shows greater support for the universalistic perspective, as PA seems to be outperformed by the control variables consistently.

Evidence supportive of the universalistic perspective was not present in the correlation coefficients that were reported for PA as a single construct and for innovation behaviour per organisation. No consistency was found across organisations. The results of the regression analysis, where all the individual PA items are regressed to predict individual innovation, also do not support the universalistic perspective. The results were inconsistent, and there were large variations between organisations.

The support for the configurational perspective was limited, and no conclusive evidence of this was found as no specific sequences apply to all 53 organisations. The results of the regression, where all the individual PA items are regressed to predict individual innovation, show that there is partial support for the configurational perspective, as repeating patterns occur in 15% of the cases in IIB and 12% of the cases in IWB. This percentage is low and configurational fit could not, therefore, be fully accepted as it is not applicable to all organisations. In the results of the regression, where PA and the control variables were regressed to predict innovation, some support for the configurational perspective was found as repeating patterns occur in all cases of the two-variable models for IIB and IWB.

As stated earlier, no test for the contingency fit was performed as data on the strategic positions of the different organisations were not collected in order to perform an analysis.

## **6 Theoretical implications**

The study contributes to scholarly literature and theory on PA and innovation within the South African setting, where prior research of this nature has not been carried out. Of more (and global) importance may be that this investigation has led to an increase in knowledge and discovery of the PA and innovation relationship across organisations. The analysis shows that PA is a driver of innovation at the organisational level, but only in some organisations. A practically significant PA and innovation relationship was established in approximately 30% of the organisations. The items of the PA measure, or aspects of PA which drive innovation, have been specified only partially and tentatively. These were, however, found in only some organisations. To complicate matters further, it was found that the individual items of the PA measure predict innovation better than the composite score does. This warrants further research on the psychometric properties of the PA measure, especially exploratory factor analysis. Furthermore, the importance of PA overall, as well

as its importance as an antecedent to innovation in the workplace, has been established. It has further been established that there are other variables that have a more substantial influence on innovation than PA does at the organisational level. This type of analysis was not found in the literature consulted when drafting this document and this positioning of PA amongst other antecedents is a valuable contribution to the body of knowledge. Considering the applicability of the human resource models (universalistic, contingent, or configurational perspective), it can be reported that there is no support for the universalistic perspective as no uniformity was found across organisations. However, there is some support for the configurational perspective as repeating patterns were found in the two-variable models, but the configurational fit could not be wholly accepted as no explicit patterns apply to all 53 organisations.

## **7 Practical implications**

The results of this research are expected to be of significance to all stakeholders and may perhaps aid human resource professionals and supervisors. Focusing interventions on the identified aspects will permit supervisors and human resource specialists to enhance their PA methods further, aligning them to improve innovation at the organisational level. This, however, comes with a warning as, although there is some commonality, it does not apply universally. Additionally, the magnitude of the PA-innovation link has been quantified. The overlaps differ in their range (large variation between the coefficients); in some organisations, PA is a practically significant driver of innovation, and in others not. The uncertainty may be due to PA not being employed as a tool for the purposes of determining performance bonuses in South Africa. No specific PA practices drive innovation universally, and it is thus difficult for practitioners to know where specifically to focus. The attention of human resource practitioners is drawn to the relative role of PA as a predictor of innovation within organisations, relative to other antecedents. Even though the research has provided confirmation that PA has a role to play in influencing innovation within an organisation, it is apparent that PP, CE, and TL have a much more significant role in driving innovation at the organisational level. The effect of PA is small, compared to the other organisational variables. Thus the focus should be on these other variables. It can, therefore, be recommended that human resource practitioners should concentrate on the employment of proactive employees, rather than managing them with PA practices, and that this shift in emphasis may be at the source of innovation

in organisations. This information would enable supervisors and managers to improve innovation behaviour and enhance competitive advantage accordingly.

## **8 Limitations of the study**

This research was subject to four specific limitations that warrant discussion. The first limitation was posed by the use of a cross-sectional survey design for this investigation. Cross-sectional studies are performed at a certain point in time and provide no indication of the sequence of events, thus making it exceptionally difficult to infer causality (Levin, 2006) from the study. However, in order to overcome the restrictions introduced by a cross-sectional study, a longitudinal or experimental design is recommended. The second restriction was that the study was conducted per organisation and did not include a sector analysis as the total number of organisations per sector was deemed insufficient for statistical analysis. Even if it could be expected that the unique sequences of items that predict innovation per organisation could be localised in specific sectors in South Africa, no patterns were observed to suggest that this is true. Nonetheless, further research in this regard is still recommended. The third constraint in this study was utilising only respondents' perceptions. The outcomes may have been more explanatory had the reporting incorporated the perceptions of supervisors or managers, or had organisational statistics, such as registered patents, been utilised. Multi-source and multi-method research is recommended. The fourth limitation was that the contingency model confirmation was impossible as data on the strategy of the organisations were not collected. Prospective scholars are urged to also collect data on the present strategic positions of the organisations so as to be able to assess the applicability of all three models.

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## **Appendix D: Empirical article three for objectives six and seven**

In this article, the effect of PA on innovation was investigated by presenting empirical evidence on the link between PA and innovation (and its relative influence, given human resource antecedents), both across employees and within organisations. The researcher addresses the sixth and seventh research objectives via an empirical study in the form of the article below.

### **PERFORMANCE APPRAISAL AS AN ANTECEDENT TO INNOVATION: AN ANALYSIS OF ITS RELATIVE IMPORTANCE AMONGST OTHER HUMAN RESOURCE PRACTICES**

#### **Abstract**

A number of studies have shown that human resource practices (HRPs) contribute to innovation. However, appropriate quantification with regard to the specific HRPs which drives innovation within the South African context is not sufficiently investigated. Within the South African context the specific drivers of innovation across employees and organisations are not well specified. The HRP-innovation link was investigated among 3180 employees across 53 organisations, utilising a cross-sectional survey design involving quantitative data, and focusing specifically on the relative importance of performance appraisals (PAs). The study reveals that HRPs are a driver of innovation, accounting for approximately 15% of the variance in innovation when considering the sample of employees. In this case, PA is neither a common nor a unique predictor of innovation. When focusing on the HRPs-innovation link across organisations, the study shows that a significant HRPs-innovation link was established in approximately 60% of the organisations. Furthermore, PA played a significant role as predictor of innovation in 10 (out of 53) organisations. Although PA has a less important role to play in influencing innovation, it is evident that training and development, supervisor support, and staffing play a much larger role in driving innovation at the organisational level. This places the relative importance of PA as an antecedent to innovation amongst other HRPs into perspective, both across employees and within organisations. Furthermore, the results of this study have the potential to benefit all interested parties and may

also assist managers, human resource practitioners, and researchers to place emphasis on the specific HRPs which significantly enhance innovation at the employee level as well as at the organisational level.

**Keywords:** Human resource models, human resource practices, innovation, performance appraisal, South Africa

## 1 Background

Innovation is essential as it allows the organisation to increase its performance and competitive position in the marketplace (Abbaspour, 2015; Al-Ghamdi, Abdel-Razek, & Abdel-Razek, 2015; Dalota, & Perju, 2010; Hashim, Ali, & Fawzi, 2005; Le Bas, & Lauzikas, 2009; Ling, & Nasurdin, 2011; Matthew, 2014). Furthermore, innovation in organisations leads to competitive advantage (Aryanto, Fontana, & Afiff, 2015; Hashim, Ali, & Fawzi, 2005; Looise, & Van Riemsdijk, 2004; Subramaniam, & Youndt, 2005). Survival of organisations in the current economic climate is dependent on innovation (Abbaspour, 2015; Aryanto, Fontana, & Afiff, 2015; Ceylan, 2013; Dalota, & Perju, 2010; Ozdemicri, & Behram, 2014; Runfeng, 2011). In addition, innovation is vital for organisational advancement, success, and survival (Chang, Gong, & Shum, 2011; Maier, Brad, Nicoara, & Maier, 2014; Ozdemicri, & Behram, 2014).

It is quite obvious that innovation is important, as highlighted in the preceding paragraph. However, it is not possible to achieve innovation without allocating human resources to innovation initiatives, as well as introducing suitable human resource practices (HRPs) (Findikli, Yozgat, & Rofcanin, 2015; Kim, & Choi, 2014; Le Bas, & Lauzikas, 2009). Also, according to Chen and Huang (2009), Cooke and Saini (2010) and Damanpour (1991), it is important that HRPs be adopted as part of the effort to implement innovation within an organisation.

In numerous studies, it has been empirically established that performance appraisal (PA) (Aktharsha, & Sengottuvel, 2016; Choi, Moon, & Ko, 2013; Dalota, & Perju, 2010; Runfeng, 2011), as well as other HRPs (Aktharsha, & Sengottuvel, 2016; Chang, Gong, & Shum, 2011; Dalota, & Perju, 2010; Kong, Chadee, & Raman, 2013; Matthew, 2014) are antecedents to innovation.

Referring to specific practices, numerous studies have shown that specific HRPs, namely PA, career opportunities, employee participation, and rewards, contribute to innovation (Dalota, & Perju, 2010; Jimenez-Jimenez, & Sanz-Valle, 2005; Laursen, & Foss, 2003). On the other hand, Aktharsha and Sengottuvel's (2016) research revealed that there are three chief HRPs, i.e., PA, recruitment and selection, and compensation, as well as rewards that are significant predictors of knowledge sharing. Numerous articles (Aktharsha, & Sengottuvel, 2016; De Winne, & Sels, 2010; Subramaniam, & Youndt, 2005; Wu, & Lee, 2013) have already empirically established that knowledge sharing plays an important role in predicting innovation. Wu and Lee (2013) further suggest that training and development, compensation and rewards, participation, and work design significantly affect knowledge sharing and innovation performance. Also, Kim and Choi (2014) found that PA, reward, and training enhance affective commitment which, in turn, contributes to innovation.

Given the aforementioned, it is evident that there is no consensus on the particular practices which drive innovation. More so, the relative importance of the different practices is not well known. It is also not surprising that much of the research into HRPs and innovation is conducted primarily within the Western context (Al-Bahussin, & El-Garaihy, 2013; Al-Ghamdi, Abdel-Razek, & Abdel-Razek, 2015; Dalota, & Perju, 2010; De Saa-Perez, & Diaz-Diaz, 2010; Gil-Marques, & Moreno-Luzon, 2013; Katou, 2008; Le Bas, & Lauzikas, 2009). Evidence of empirical research on the relationship between HRPs and innovation is seemingly lacking within the South African context. Within the latter context, the specific drivers of innovation across employees and organisations are not well specified. This study will attempt to create clarity on the specific human resource drivers of innovation, as well as contextualising the research within the South African context.

Although several empirical studies (e.g., Al-Bahussin, & El-Garaihy, 2013; Al-Ghamdi, Abdel-Razek, & Abdel-Razek, 2015; Aryanto, Fontana, & Afiff, 2015; Dalota, & Perju, 2010; Gil-Marques, & Moreno-Luzon, 2013; Katou, 2008; Le Bas, & Lauzikas, 2009; Matthew, 2014) have uncovered a link between HRPs and innovation, the research was often single-company or single-industry driven and undertaken with relatively small samples. This study will use a relatively large sample ( $N > 3000$ ) to investigate the relationship both across employees and across organisations.

The majority of the research (e.g., Gil-Marques, & Moreno-Luzon, 2013; Le Bas, & Lauzikas, 2009; Matthew, 2014) has been limited to examining HRPs as a single concept rather than as individual practices in their own right. Becker and Huselid (1998), in their seminal paper, as well as others, such as Makongoso, Gichira, and Orwa (2015), Tang, Wei, Snape, and Ng (2015) and Zhang and Jia (2010), prefer a focus on a single concept. This study will attempt to include several other HRPs in the model. Boada-Grau and Gil-Ripoll (2009), Madmoli (2016), Steyn (2012), as well as Sun, Aryee and Law (2007) prefer to focus on multiple HRPs. The focus of this research will be on the individual practices, particularly PA, as this will allow managers to make informed decisions about which practice to focus on, rather than improving human resources in general.

### **1.1 Research problem**

Countless studies have shown that HRPs contribute to innovation. However, appropriate quantification with regard to PA as an antecedent to innovation, relative to an array of individual HRPs, both across employees and within South African organisations, is not sufficiently investigated. Without this nuance of information on the individual HRPs-innovation relationship, human resource managers and practitioners may inappropriately allocate resources to specific HRPs, thus hindering organisational success.

### **1.2 Aim**

The aim of this article is to investigate the ranking of PA as an antecedent to innovation, relative to an array of individual HRPs, both across employees (in general) and within (specific) South African organisations.

## **2 Literature review**

There is widespread interest in human resources, and practitioners and researchers often debate the available HRP literature. According to Al-Bahussin and El-Garaihy (2013), human resources is important to organisations. Momemi, Marjani, and Saadat (2012) posit that human resource practitioners have started to recognise the importance of HRPs. Ceylan (2013), Cooke and Saini (2010) and Hayton (2005) indicate that research by human resource practitioners and researchers on HRPs and innovation has increased considerably over the past few decades.

Similarly, according to Burma (2014), Delery and Gupta (2016) and Hayton (2005), studies on HRPs by human resource practitioners and researchers have increased dramatically in the last two decades. The number of journals dedicated to human resource management has increased considerably in the past few years, both in South Africa and internationally.

Effective human resources have positive effects in general. Most successful organisations exploit HRPs, as management tools to improve effectiveness and performance (Ayers, 2013; DeNisi, & Pritchard, 2006; Esu, & Inyang, 2009; Hashim, Ali, & Fawzi, 2005; Melton, & Meier, 2017; Rubin, 2011). HRPs contribute to continuous improvement and success (Ahmed, Mohammad, & Islam, 2013; Hayton, 2005) and, in addition, HRPs are employed in organisations to serve many purposes. Collins and Clark (2003), Delery and Doty (1996), Delery and Gupta (2016), Kehoe and Wright (2013), Martinsons (1995) and Melton and Meier (2017) argue that HRPs are important in trying to achieve organisational goals.

Human resources consist of many practices. Edralin (2010) suggests that HRPs include designing and analysing work, PA, recruiting, compensation, selecting, human resource planning, training and development, and employee relations. Cascio (2010), meanwhile, suggests that staffing, job design, information sharing, PA, promotion systems, attitude assessment, incentive systems, grievance procedures, and labour management participation are the best HRPs for 21<sup>st</sup> century firms. Also, Madmoli (2016) argues that selection, training, job evaluation, rewarding, employee participation, and recruiting, as well as knowledge or information sharing, are effective HRPs. As a final example, Sun, Aryee, and Law (2007) indicate that job security, training, promotion, appraisal, and career paths are high-performance HRPs.

Several articles (Al-Bahussin, & El-Garaihy, 2013; Al-Ghamdi, Abdel-Razek, & Abdel-Razek, 2015; Aryanto, Fontana, & Afiff, 2015; Dalota, & Perju, 2010; Gil-Marques, & Moreno-Luzon, 2013; Katou, 2008; Le Bas, & Lauzikas, 2009; Matthew, 2014; Shipton, West, Dawson, Birdi, & Patterson, 2006) have empirically established the relationship between HRPs and innovation and in addition, based on human resource management literature by Noe, Hollenbeck, Gerhart, and Wright (2008) which describes that HRPs have been recognised to improve organisational performance by contributing to innovation, satisfaction, and productivity. Laursen and Foss (2003), for example, found that seven out of the nine HRPs lead to innovation.

Dalota (2013), Looise and Van Riemsdijk (2004) and Walsworth and Verma (2007) indicate that HRPs contribute to innovation while Hashim, Ali, and Fawzi (2005), Jimenez-Jimenez and Sanz-Valle (2005), Ling and Nasurdin (2011), Looise and Van Riemsdijk (2004) and Matthew (2014) suggest that HRPs have a major impact on innovation. Furthermore, Dalota and Perju (2010) theorise that motivating employees to generate innovative ideas that promote innovation can be achieved by utilising HRPs within an organisation.

Theoretically, the focus on certain practices could be explained. Organisations routinely utilise a combination of HRPs, or individual HRPs, to either directly or indirectly gain competitive advantage (Delery, & Doty, 1996; Delery, & Gupta, 2016; Edralin, 2010; Hashim, Ali, & Fawzi, 2005; Ling, & Nasurdin, 2011). As stated above, however, no consensus on the particular practices which drive innovation are available, particularly within the South African context. This research will focus on that. It is, however, not clear whether HRPs are an effective driver of innovation in all organisations. The three major approaches to understanding human resource management i.e., the universalistic, contingency, and configurational perspectives (Delery, & Doty, 1996; Hamid, 2013; Katou, & Budhwar, 2007; Nigam, Nongmaithem, Sharma, & Tripathi, 2011), are presented below:

- The universalistic perspective theorises that some HRPs are generally superior to others in all organisations under any conditions (Delery, & Doty, 1996; Jeong, & Choi, 2016; Katou, 2008; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009). This suggests that organisations that accept these best practices achieve superior results (Delery, & Doty, 1996; Jeong, & Choi, 2016; Katou, 2008; Steyn, 2012) and that strategy and human resource policies are equally free in influencing organisational performance (Claus, 2003; Huselid, 1995; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009; Pfeffer, 1994).
- The contingency perspective theorises that the choice of a certain set of human resource policies or practices is reliant on strategy (Katou, 2008; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009). Gomez-Mejia and Balkin (1992), Katou and Budhwar (2007), Schuler and Jackson (1987), and Youndt, Snell, Dean and Lepak (1996) indicate that there needs to be a fit between organisational strategy and human resource strategy to influence organisational performance. In a study by Katou (2008), the researcher suggests that a



contingency perspective may mean that an innovation strategy determines human resource policies – or that human resource policy determines an innovation strategy for an organisation. Meanwhile, the choice of the innovation strategy for organisations is dependent on a specific bundle of HRPs (Dalota, & Perju, 2010; Jimenez-Jimenez, & Sanz-Valle, 2005; Laursen, & Foss, 2003).

- The configurational perspective, according to Jeong and Choi (2016) and Lengnick-Hall, Lengnick-Hall, Andrade, and Drake (2009), theorises that groupings of certain HRPs, rather than individual HRPs, increase organisational performance as some practices reinforce one another. This implies that there are particular combinations of HRPs that are the most suitable for improving organisational performance. Delery and Doty (1996) indicate that, for the configurational perspective, there should be both internal consistency of HRPs (horizontal fit) and congruence of human resource systems and other organisational features (vertical fit).

Considering the three theoretical perspectives, all HRPs uniformly correlating with innovation in all 53 organisations would provide proof of the HRP-innovation link being universalistic. Should the relationship be a good fit for the configurational perspective, it might be expected that the results will show specific patterns in the way in which HRPs correlate with innovation across organisations. Unfortunately, confirmation of a contingency perspective would require data on the strategic positions of the different organisations to have been gathered, but this was not done. The contingency perspective could, therefore, not be investigated.

### **3 Method**

#### **3.1 Research approach**

A cross-sectional survey design, which concentrated on quantitative data, was employed for this study. Bryman (2012) and Punch (1998) suggest that a quantitative research design procedure is suitable for this study as it readily allows the establishment of relationships between variables. This study makes use of secondary data only.

The data utilised in this study was gathered as part of a research project led by the second author of the study. Only South African organisations formed part of the study. The sample for the

organisations was not random, but rather a convenience sample. Once the organisations had been identified, respondents were chosen at random from the organisation's employee records. Ultimately, data comprised of 3 180 employees employed by 53 organisations within South Africa, representing the private sector, parastatals, and government departments. The data was gathered as per the ethics guidelines of the University of South Africa (UNISA), and authorisation was obtained from the UNISA Research Ethics Review Committee to use the data as secondary data.

### **3.2 Measuring instruments**

The HRP scale (Nyawose, 2009), the Individual Innovative Behaviour questionnaire (Kleysen, & Street, 2001), and the Innovative Work Behaviour questionnaire (De Jong, & Den Hartog, 2010) were the three instruments employed in this study. In this study, two measures of individual innovation in the workplace were assessed, namely IIB and IWB.

- The HRP scale by Nyawose (2009) was employed to assess the apparent effectiveness of HRPs. This questionnaire is comprised of 21 statements, arranged according to seven HRPs (training and development, compensation and rewards, PA, supervisor support, staffing, diversity management, and communication and information sharing) and with each HRP area containing three statements. The items are presented in Table 1 below. Respondents were invited to indicate their perceptions for each item on a five-point scale as follows: 1 (Strongly disagree), 2 (Disagree), 3 (Not sure – uncertain), 4 (Agree), and 5 (Strongly Agree). The lowest possible score would be 3 and the highest 15, per HRP. Also, the highest score that could be obtained per HRP was 15 and the lowest 3. A high score would mean that respondents are of the view that HRPs were effective and a low score would show dissatisfaction with HRPs (Steyn, 2012). Nyawose (2009) reports reliability scores ranging from 0.74 to 0.93 for these HRPs, as well as significant correlations (in the expected direction), with outcomes such as occupational commitment and turnover intentions. Furthermore, Steyn (2012) and, Steyn and Grobler (2014) report Cronbach alphas of 0.87, 0.74, 0.81, 0.75, and 0.88 for five HRPs, namely compensation and rewards, staffing, PA, diversity management, and training and development respectively. In the same study by Steyn and Grobler (2014), these authors' results indicate that the HRP scale is both reliable and valid. To further support the validity of the HRP scale, Steyn (2012)

found that HRPs correlated positively with job satisfaction and negatively with the intention to quit.

- The Individual Innovative Behaviour (IIB) questionnaire by Kleysen and Street (2001) was chosen to quantify IIB. According to the authors, Kleysen and Street (2001), there is a lack of studies on a multi-dimensional measure of IIB. The IIB questionnaire consists of 14 questions, randomly itemised to avoid possible response order bias. Respondents were requested to indicate their views for each question on a six-point scale ranging from 1 (Never) to 6 (Always). The lowest score that could be obtained was 14 and the highest 84. Each of the 14 items was prefaced with the following question: “In your current job, how often do you?” (Kleysen, & Street, 2001: 288). Kleysen and Street (2001) report that a measure of inter-correlation between the 14 questions resulted in a Cronbach alpha of 0.95 and good construct validity. All five factors are strongly correlated with each other, with the highest correlation being between application and formative investigation ( $R=0.81$ ;  $p<0.01$ ) and the lowest between championing and generativity ( $R=0.68$ ;  $p<0.01$ ). Kleysen and Street (2001) thus suggest that the 14 items can be combined into a single measure of innovative behaviour, and this was done for this research.
- The Innovative Work Behaviour (IWB) questionnaire from De Jong and Den Hartog (2010) was additionally selected as it measures IWB. The IWB questionnaire consists of 10 questions. The existing IWB questionnaire had to be modified for the purposes of this study. No measurement scale was provided in the De Jong and Den Hartog (2010) article. A scale was therefore introduced, ranging from (0) Never to (6) Always. The lowest score that could be obtained was 0 and the highest 60. The following is a question from the original IWB questionnaire: “How often does this employee...pay attention to issues that are not part of his daily work?” (De Jong, & Den Hartog, 2010: 29). This format did not suit the study, which emphasises the views of individuals concerning their IWB. All ten items of the questionnaire were thus amended to begin “As an employee how often do you...” instead of “How often does this employee...”. De Jong and Den Hartog (2010) report that the instrument is adequately reliable (Cronbach alpha $>0.7$ ). According to De Jong and Den Hartog (2010), there is clear evidence that employee’s innovation outputs ( $R=0.35$ ;  $p<0.01$ ), participative leadership ( $R=0.25$ ;  $p<0.01$ ) and

external work contacts ( $R=0.27$ ;  $p<0.01$ ) correlate with IWB and this points to good criterion validity. The adapted version of the instrument was used for this study.

### **3.3 Statistical analysis**

The Statistical Package for Social Science (SPSS) was utilised to conduct all statistical analysis in this study, except for the confirmatory factor analysis, which was performed using the lavaan package which is part of the R statistical language.

Firstly, frequencies were computed to provide biographical data on respondents. Then, Cronbach alphas were calculated to confirm the reliability of all instruments. Based on recommendations from Bhatnagar, Kim, and Many (2014), and Hair, Black, Babin, and Anderson (2009), all instruments with a Cronbach alpha more than 0.6 were considered to possess adequate reliability.

As a prerequisite for factorial validity, Kaiser-Meyer-Olkin and Bartlett's test of sphericity was performed to confirm the appropriateness of factor analysis for this study. The Kaiser-Meyer-Olkin measure of sampling adequacy at close to one would indicate that a factor analysis may be appropriate for this study. Child (2006), and Field (2013) indicate that the Kaiser-Meyer-Olkin measure of sampling adequacy is acceptable when above the minimum criterion of 0.5. Exploratory factor analysis and then confirmatory factor analysis was used to assess the validity of the HRP scale.

In the case of the exploratory factor analysis, the rotated component matrix was utilised to appropriately organise the loadings as well as to group the factors through their factor loadings to provide interpretable results. The rotation method adopted was the varimax rotation as this is the most common option. Hair, Black, Babin, and Anderson (2009) suggest that loadings are acceptable when above 0.5, while loadings below 0.3 should be disregarded. According to Pallant (2007), ideally, three or more of the items should load on each of the factors.

In the case of the confirmatory factor analysis, the lavaan package was used for the analysis. A seven-factor model of training and development, compensation and rewards, PA, supervisor support, staffing, diversity management, and communication and information sharing was tested. Maximum likelihood estimation was selected, and the latent factors were standardised to allow free estimation of all factor loadings. Awang (2012) and Hair, Black, Babin and Anderson (2009)

suggest that the model fit is acceptable when the Tucker-Lewis-Index (TLI) is greater than 0.9, the Comparative Fit Index (CFI) is greater than 0.9, and the Root Mean Square Error of Approximation (RMSEA) is less than 0.05.

Correlation coefficients were also computed between HRPs (as a single construct) and for innovation behaviour, both across employees and per organisation. Pearson correlations (2-tailed) were utilised to define the extent of the relationship between the variables. These correlations were considered statistically significant at the 0.01 level. Based on the guidelines set out by Cohen (1988), the calculation of the practical significance of the alphas is as follows: R greater than 0.5 is deemed “large”, R greater than 0.3 but less than 0.5 is deemed “medium” and R greater than 0.1 but less than 0.3 is deemed “small”.

Two regression analyses were performed at each of the employee level and the organisational level. Firstly, these analyses were executed to compute how the different subscales of HRPs predict, IIB and IWB. Thereafter, the subscales of HRPs, which significantly and uniquely predict, IIB and IWB, were identified. The “Enter” option in SPSS was selected for the regression analysis where all the HRPs were regressed to predict innovation. The “Stepwise” option in SPSS was then selected for the regression analysis in order to identify the individual HRPs which contribute uniquely and significantly to predicting innovation. Finally, following the procedure set out by Pallant (2013) as well as Peck and Devore (2011), the coefficient of determination in innovation (dependent variable) was calculated by multiplying the  $R^2$  values by 100.

When considering the models across organisations, validation of a universalistic model would be evident when all organisations display similar relationships between HRPs and innovation, with little variation between organisations. Another indicator of the universalistic perspective would be whether  $R^2$  was significant for the HRPs-innovation link in all organisations. The same HRP subscales should relate to innovation across organisations, and the relative contribution of antecedents should be ranked similarly across organisations.

Validation of a configurational model would consist of establishing unique sequences in which HRPs relate to innovation. Validation of a configurational model would be seen if particular combinations of subscales frequently predict innovation, or should patterns of antecedents predict innovation significantly.

## 4 Results

### 4.1 Biographical data

The sample population consisted of 3 180 employees drawn from 53 organisations within South Africa, representing the private sector, parastatals, and government departments.

**Gender:** The respondents were grouped into the two common gender groups. The 2016 Quarterly Labour Force Survey points out that the gender demographic across South Africa as a whole is almost equally distributed (Statistics South Africa, 2016), and this is closely aligned to the gender distribution in this study. A total of 1 771 (55.7%) respondents logged their gender as male, and 1 372 (43.1%) recorded their gender as female, while the missing data amounted to 37 (1.2%).

**Race:** The respondents were grouped into four common South African race groups, and this data is aligned to the Quarterly Labour Force Survey in the sense that, in the larger South African context, Blacks make up the largest workforce group, followed by Whites, Coloureds, and Asians in descending order (Statistics South Africa, 2016). A total of 263 (8.3%) respondents marked Asian, 1 830 (57.5%) Black, 263 (8.3%) Coloured, and 787 (24.7%) White, while the missing data is 37 (1.2%) in this study.

**Age:** The 2016 Quarterly Labour Force Survey indicates that the age of the South African workforce ranges from 15 to 64 years (Statistics South Africa, 2016), and this is closely aligned to the respondents in this research whose ages range from 20 to 72 years, with a mean of 37.81 and a standard deviation of 9.10.

**Educational qualifications:** A total of 934 (29.4%) respondents hold a bachelor's degree or higher, 1 274 (40.1%) possess a diploma, 789 (24.8%) have matric, and 143 (4.5%) have less than 12 years of schooling, while the missing data is 40 (1.3%).

**Management and tenure:** Those in management positions totalled 1 156 (36.4%) and those in non-management positions represented 1 983 (62.4%), while the missing data was 41 (1.3%). As far as tenure at their current employer is concerned, this varied between one month and 42 years, with a mean of 8.49 and a standard deviation of 7.45.

**Job categorisation:** The respondents were grouped into five job categories. A total of 72 (2.3%) respondents form part of an unskilled and defined decision-making group, 626 (19.7%) form part of a semi-skilled and discretionary decision-making group, 1 359 (42.7%) are skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents, 893 (28.1%) are professionally qualified, experienced specialists and middle management, and 163 (5.1%) are members of top or senior management, while the missing data is 67 (2.1%). Respondents in core businesses totalled 1 432 (45.0%), and those in support businesses represented 1 730 (54.4%), while the missing data was 18 (0.6%).

**Economic sector:** The organisations were grouped into three sectors already alluded to. A total of 1 981 (62.3%) organisations fall within the private sector, 480 (15.1%) are parastatal, and 719 (22.6%) are government departments for example, the Department of Trade and Industry, the Department of Tourism, and so on.

From the biographical data presented above, it is evident that the respondents in this study represent a broad cross-section of the South African workforce.

## 4.2 Reliability

Table 1 presents all constructs (each construct consists of three items) included in this study, as well as the individual HRP statements. The HRP scale consists of seven constructs or factors, and each construct or factor consists of three items. Cronbach alphas for the individual constructs and instruments are also presented in the last column.

**Table 1: Constructs, items of the HRP scale, and reliability coefficients**

Constructs	No.	Statement	$\alpha$
<b>Training and development</b>	1	My company is committed to the training and development needs of its employees.	0.849
	2	Employees are encouraged to accept education and training within the company.	
	3	This organisation has provided me with training opportunities enabling me to extend my range of skills and abilities.	
<b>Compensation and rewards</b>	4	My salary and benefits have been an adequate return for the time and energy demanded of me.	0.842
	5	I am satisfied with my company reward system to compensate good performance.	

<b>Constructs</b>	<b>No.</b>	<b>Statement</b>	<b><math>\alpha</math></b>
	6	The company's compensation and reward system encourages team and individual contributions.	
<b>PA</b>	7	My company's performance management system is fair and based on clear objectives at the beginning of the term/year.	0.786
	8	The company has provided enough information regarding specific methods of the performance evaluation system.	
	9	Employees are allowed to formally communicate with supervisors/managers regarding the appraisal results.	
<b>Supervisor support</b>	10	My supervisor would personally use his/her power to help me solve my work problems.	0.845
	11	My supervisor always gives credit and encourages an employee for a job well done.	
	12	My supervisor often lets me know how well he/she thinks I am performing the job.	
<b>Staffing</b>	13	Proper company procedures and processes are always followed when staffing/recruitment decisions are made.	0.724
	14	Interview panels are used during the staffing process in this organisation.	
	15	All appointments in this organisation are based on merit (i.e., the best person for the job is selected, regardless of their personal characteristics).	
<b>Diversity management</b>	16	The company spends enough time and effort on diversity awareness related to race, gender and religion.	0.750
	17	Management is supportive of cultural difference in this organisation.	
	18	People living with disabilities have the employment opportunities in this organisation.	
<b>Communication and information sharing</b>	19	My company regularly provides information sharing sessions to all employees.	0.842
	20	Continuous improved communications between management and staff is stated as an important company objective and is being practiced.	
	21	My company's communication channels are open and effective in dealing with matters that are relevant to employees.	
<b>HRP scale</b>		Human Resource Practices Scale	0.932
<b>IIB</b>		Individual Innovative Behaviour	0.951
<b>IWB</b>		Innovative Work Behaviour	0.893

As can be seen from Table 1, the total HRP scale registers a high internal consistency (Cronbach alpha=0.932), and the individual scale reliabilities were all higher than 0.7. Reliability was calculated for the IIB, as well as the IWB questionnaire, which resulted in Cronbach alphas of



0.951 and 0.893 respectively. All three instruments have a Cronbach alpha above 0.6, which indicates that the reliability of all instruments is acceptable. Cronbach alphas of 0.849, 0.842, 0.786, 0.845, 0.724, 0.750 and 0.842 were also calculated for the seven HRPs: training and development, compensation and rewards, PA, supervisor support, staffing, diversity management, and communication and information sharing, respectively.

### **4.3 Validity**

The statistical analysis of the connection between the two innovation measures (dependent variables) demonstrate that convergent validity is evident since the IIB scale correlated significantly (with a large effect) with the IWB scale ( $R=0.683$ ;  $p<0.01$ ). The relationship between the HRP scale as a single construct (independent variable) and the dependent variables also provide evidence of divergent validity. The IIB scale correlated with the HRP scale ( $R=0.228$ ;  $p<0.01$ ), and the IWB scale correlated with the HRP scale ( $R=0.319$ ;  $p<0.01$ ). These correlations were not practically significant, indicating that the instruments measure different constructs.

Since convergent validity is a measure of variables that are related to each other (Trochim, Donnelly, & Arora, 2015), a larger correlation was expected between IIB and IWB than between the HRP scale and IIB or the HRP scale and IWB, as these two variables are theoretically similar. The correlations between IIB and the HRP scale, and between IWB and the HRP scale, may be low but are significant as HRPs may be antecedents to IIB and IWB. The collected data thus offers some evidence of the validity of the measures used.

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.935, thus indicating that a factor analysis may be useful in this study. Bartlett's test of sphericity was significant, demonstrating that the correlation matrix is not an identity matrix and thus also suggesting appropriateness for a factor analysis. The significance level smaller than 0.001 suggests that the null hypothesis must be rejected. This indicates that the strength of the relationship among the variables is robust, once again justifying the factor analysis.

Considering the exploratory factor analysis, Table 2 presents the standardised factor loading for all the items of the seven constructs of the HRP scale. All loadings below 0.3 were suppressed.

**Table 2: Factor loading for the items of the HRP scale**

No.	Construct/Factor						
	C&R	C&I	SS	T&D	DM	S	PA
1	-	-	-	0.813	-	-	-
2	-	-	-	0.812	-	-	-
3	-	-	-	0.796	-	-	-
4	0.754	-	-	-	-	-	-
5	0.829	-	-	-	-	-	-
6	0.759	-	-	-	-	-	-
7	0.593	0.369	-	-	-	-	-
8	0.486	0.397	-	-	-	-	0.453
9	-	-	-	-	-	-	0.739
10	-	-	0.759	-	-	-	-
11	-	-	0.841	-	-	-	-
12	-	-	0.806	-	-	-	-
13	-	-	-	-	-	0.684	-
14	-	-	-	-	-	0.697	0.379
15	-	-	-	-	-	0.697	-
16	-	-	-	-	0.653	-	-
17	-	-	-	-	0.671	-	-
18	-	-	-	-	0.764	-	-
19	-	0.705	-	-	-	-	-
20	-	0.761	-	-	-	-	-
21	-	0.726	-	-	-	-	-

Note: C&R=Compensation and rewards; C&I=Communication and information sharing; SS=Supervisor support; T&D=Training and development; DM=Diversity management; S=Staffing; PA=Performance appraisal

As can be seen from Table 2, item seven, with standardised factor loading was observed on compensation and rewards (0.593) as well as on communication and information sharing (0.369). Item seven was designed to load on compensation and rewards primarily. Also, item eight, with standardised factor loading, was observed on compensation and rewards (0.486) as well as on communication and information sharing (0.397), and PA (0.453). Item eight was designed to load on compensation and rewards primarily. While, item fourteen, with standardised factor loading, was observed on staffing (0.697) as well as on PA (0.379). Item fourteen was designed to load on staffing primarily.

Cross loadings occurred with item one (0.813) and training and development, item two (0.812) and training and development, and item three (0.796) and training and development, with loadings greater than 0.7. Cross loadings occurred with item four (0.754) and compensation and rewards, item five (0.829) and compensation and rewards, and item six (0.759) and compensation and rewards, with loadings greater than 0.7. Cross loadings occurred with item ten (0.759) and supervisor support, item eleven (0.841) and supervisor support, and item twelve (0.806) and supervisor support, with loadings greater than 0.7. Cross loadings occurred with item nineteen (0.705) and communication and information sharing, item twenty (0.761) and communication and information sharing, and item twenty one (0.726) and communication and information sharing, with loadings greater than 0.7. Items seven, eight and nine do not load well. The PA items are problematic, loading on different factors.

Based on the acceptable fit of the confirmatory factor model, the seven-factor model (training and development, compensation and rewards, PA, supervisor support, staffing, diversity management, and communication and information sharing) was tested. Although the perfect model fit was not achieved, with a Maximum Likelihood Chi-square of 1192.82, the degrees of freedom (*df*) being 168, and  $p < 0.001$ , as is the norm with large samples (Vandenberg, & Lance, 2000), the less stringent test revealed a satisfactory fit. The TLI of 0.963 was substantially larger than the cut-off score of 0.900 (satisfactory fit), a CFI of 0.931 was also considerably greater than the cut-off score of 0.900 (satisfactory fit), and a RMSEA of 0.044 was lower than the cut-off score of 0.050 (good fit) with a 90% confidence interval from 0.042 to 0.047. Despite the cross-loadings in the exploratory factor analysis, the confirmatory factor analysis was satisfactory. The positive results pertaining to reliability and validity justified further analyses of more complex hypotheses.

#### **4.4 Correlative and regression analysis**

Table 3 presents the results pertaining to the relationship between HRPs and innovation.

**Table 3: Total sample correlative and regression analysis (N=3 180)**

Column 1	Column 2	Column 3	Column 4
<b>Measure of innovation</b>	<b>HRP scale (total score) and innovation</b>	<b>All subscales of the HRP scale and innovation</b>	<b>All subscales of the HRP scale and innovation (Optimal model)</b>
IIB	R=0.228; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.060; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.061; <i>p</i> <0.01; Subscales: Staffing, Training & development, Communication & Information sharing and Supervisor support
IWB	R=0.319; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.107; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.107; <i>p</i> <0.01; Subscales: Staffing, Training & development, Communication & Information sharing, Compensation & rewards and Supervisor support

In column 2, depicting the relationship between HRPs (as a composite score) and individual innovation, measured with different instruments, it can be reported that R=0.228 for IIB and R=0.319 for IWB. In both cases, the correlation coefficients were statistically significant. When considering the practical significance, R for IIB is “small” and for IWB is “medium”. Considering the coefficient of determination, 5.2% of the variance in IIB and 10.2% of the variance in IWB could be declared by HRPs. It is, therefore, practically insignificant.

The results of the regression are presented in column 3 where all the individual subscales of the HRP scale are regressed to predict individual innovation. The “Enter” option in SPSS was selected for this analysis. It can be reported that R<sup>2</sup><sub>adjusted</sub>=0.060 for IIB and R<sup>2</sup><sub>adjusted</sub>=0.107 for IWB, depicting the relationship between all subscales of the HRP scale and innovation, measured with different instruments. In both cases, the correlation coefficients were statistically significant. When considering the practical significance, R<sup>2</sup><sub>adjusted</sub> for IIB and IWB is “small”. Using all the subscales of the HRP scale allowed for 6.0% of the variance in IIB and 10.7% of the variance in IWB to be declared. Though this is still practically insignificant, it seems that the subscales are a better predictor of innovation than are the aggregate scores.

In order to identify those individual HRPs which contribute uniquely and significantly to predicting individual innovation, “Stepwise” regressions were performed using the “Stepwise” option in SPSS. From column 4, it can be read that staffing, training and development,

communication and information sharing, and supervisor support (listed in descending order of influence on innovation) of the HRP scale are the individual HRPs which influence IIB uniquely and significantly, while staffing, training and development, communication and information sharing, compensation and rewards, and supervisor support (listed in descending order of influence on innovation) of the HRP scale are the individual HRPs which influence IWB uniquely and significantly.

The subscales common to predicting both IIB and IWB are staffing, training and development, communication and information sharing, and supervisor support, while the subscale unique to predicting IWB is compensation and rewards. It is evident that four out of the seven subscales are common predictors of innovation, while only one of the seven is a unique predictor. Considering these important predictors, it is evident that PA and diversity management are neither common nor unique predictors of innovation.

While the importance of PA as an antecedent to innovation relative to an array of individual HRPs across employees has been established, it is, however, not clear whether the individual HRPs are an effective driver of innovation in all organisations. The intention of the following analysis is to investigate the importance of PA as an antecedent to innovation, relative to an array of individual HRPs within specific South African organisations.

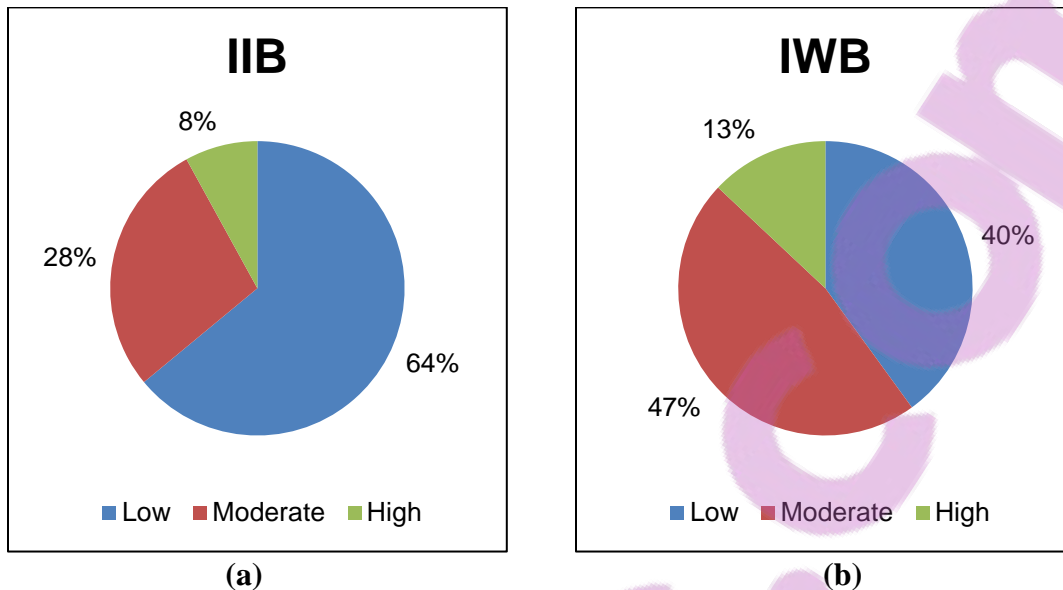
Table 4 presents three columns (Column 2 to Column 4) of results for the individual samples drawn from the 53 organisations. In column 2, the correlation coefficients are presented for the HRPs as a single construct and innovation. The results of the regression, where all the individual HRP subscales are regressed to predict individual innovation, are presented in column 3. Column 4 presents the results where the individual HRP subscales which contribute uniquely and significantly to predicting individual innovation are identified. As it is not viable to present data for all 53 organisations in one table, a small section is presented here. However, Table 4 is followed by a comprehensive summary of the complete table.

**Table 4: Organisation specific correlative and regression analysis (N=60 per organisation)**

Column 0	Column 1	Column 2	Column 3	Column 4
Organisation	Measure of innovation	HRP scale (total score) and innovation	All subscales of the HRP scale and innovation	All subscales of the HRP scale and innovation (Optimal model)
1	IIB	R=0.473; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.291; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.299; <i>p</i> <0.01 Subscale: Supervisor support
	IWB	R=0.214; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.141; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.136; <i>p</i> <0.01 Subscale: Supervisor support
5	IIB	R=0.171; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.073; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.050; <i>p</i> <0.01 Subscale: Staffing
	IWB	R=0.318; <i>p</i> <0.05	R <sup>2</sup> <sub>adjusted</sub> =0.040; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.077; <i>p</i> <0.01 Subscale: Staffing
51	IIB	R=0.528; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.352; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.403; <i>p</i> <0.01 Subscales: Supervisor support and Compensation & rewards
	IWB	R=0.464; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.208; <i>p</i> <0.01	R <sup>2</sup> <sub>adjusted</sub> =0.227; <i>p</i> <0.01 Subscale: Supervisor support

In column 2, depicting the relationship between HRPs (as a composite score) and individual innovation, measured with different instruments per organisation, it can be reported that all organisations displayed statistically significant coefficients between the HRP scale and IIB, with *p*<0.01 and *p*<0.05. The average coefficient for all 53 organisations was 0.228. In total, 4/53 (8%) coefficients could be deemed as being of high practical significance (R>0.5), 15/53 (28%) as being of moderate, practical significance (R>0.3) and 34/53 (64%) as being of low practical significance (R>0.1). Staying with column 2, but focusing now on the relationship between HRPs and IWB, it can be reported that all 53 organisations displayed statistically significant coefficients between HRPs and IWB, with *p*<0.01 and *p*<0.05. The average coefficient was 0.311. In total, 7/53 (13%) coefficients could be deemed as being of high practical significance (R>0.5), 25/53 (47%) as being of moderate, practical significance (R>0.3), and 21/53 (40%) as being of low practical significance

( $R > 0.1$ ). The results with regard to the practical significance of the coefficients between HRPs and IIB, as well as HRP and IWB are presented in Figure, 1 below.

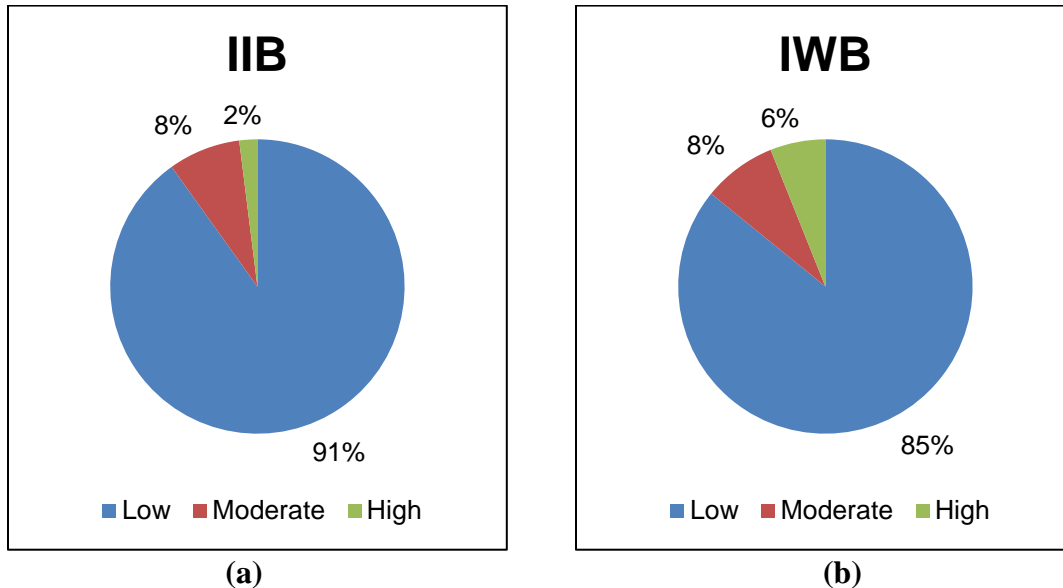


**Figure 1: Practical significance of the correlation coefficients between HRPs and innovation across organisations**

As seen in Figure 1a, in IIB there is high practical significance in a smaller proportion (8%) of the organisations when the HRP scale total scores correlated with innovation. Figure 1b also shows that, in IWB, there is high practical significance in a smaller proportion (13%) of the organisations when the HRP scale total scores correlated with innovation.

In column 3, the results of the regression are presented where all the individual subscales of the HRP scale are regressed to predict individual innovation at the organisational level. The “Enter” option in SPSS was selected for this analysis. It can be reported that all organisations displayed statistically significant coefficients between HRPs and IIB, with  $p < 0.01$ . Using the regression approach yielded much lower statistically significant coefficients. The average coefficient was 0.090. In total, 1/53 (2%) of the coefficients could be deemed as being of high practical significance, 4/53 (8%) as being of moderate, practical significance and 48/53 (91%) as being of low practical significance. Continuing with column 3, now concentrating on the relationship between HRPs and IWB, all organisations displayed statistically significant coefficients for IWB, with  $p < 0.01$ . The average coefficient was 0.163. In total, 3/53 (6%) of the coefficients could be deemed as being of high practical significance, 5/53 (9%) as being of moderate, practical

significance and 45/53 (85%) as being of low practical significance. The results with regard to the practical significance of the coefficients between HRPs and IIB, as well as HRPs and IWB are presented in Figure 2, below.



**Figure 2: Practical significance of the regression coefficients between all subscales of the HRP scale and innovation across organisations**

As reflected in Figure 2a, in IIB there is high practical significance in a smaller proportion (2%) of the organisations when all the individual subscales of the HRP scale correlate with innovation. Figure 2b shows that, in IWB, there is high practical significance in a smaller proportion (6%) of the organisations when all the individual subscales of the HRP scale correlate with innovation. The low IIB and IWB coefficients, in a majority of the organisations, suggest that other factors must drive innovation.

Comparing the results in column 2 and column 3, it seems that following the correlation approach, to calculate the coefficients between HRPs (as a single construct) and innovation, yielded better results than use of the regression approach in which all the individual subscales of the HRP scale are regressed to predict individual innovation. The relationship when using the HRPs as a single construct was larger than did using all the individual subscales of the HRP scale. This may suggest both that HRP as a single construct is a better predictor of innovation and that a higher-level latent construct (which informs the total scores rather than the individual items) is responsible for the declared covariance.



“Stepwise” regressions – using the “Stepwise” option in SPSS – were performed in column 4 in order to identify the individual HRP subscales which contribute uniquely and significantly to predicting individual innovation at the organisational level. This analysis served to test a hypothesis on the relative importance of PA across organisations, but more specifically, to find patterns amongst PA items which predict innovation. This was important to gain statistics on testing hypotheses on the universalistic, contingency, and configurational perspectives of human resource practices. It can be reported that all organisations displayed statistically significant coefficients between the individual HRP subscales and IIB, with  $p < 0.01$ . The average coefficient was 0.159. This higher coefficient for column 4, when compared to column 3, was expected, as only a small number of items which contributed significantly were included, and the additional items which erode the regression coefficient were excluded. In total, 1/35 (3%) of the coefficients could be deemed as being of high practical significance, 3/35 (9%) as being of moderate practical significance, and 31/35 (89%) as being of low practical significance, while there is missing data for 18 organisations (organisations 2, 3, 4, 10, 12, 13, 15, 20, 28, 29, 34, 36, 39, 41, 47, 50, 52, and 53). The chains for the optimal models per organisation for IIB include 29 models with one variable, five with two variables and one with four variables. Organisation 38 had the most variables (four) in its optimal model. The most common subscale was training and development as it appears in nine of the 35 models. The next most common subscales were staffing, and diversity management as these appear in eight of the models, followed by supervisor support, and communication and information sharing which appear in five of the models. Compensation and rewards, and PA were the least common variables as these subscales appear in only four of the models. To detect evidence of sequences in the subscales predicting innovation, the two-variable models were analysed further. No repeating patterns were found in the two-variable models.

Still focusing on column 4, all organisations displayed statistically significant coefficients between the individual HRP subscales and IWB, with  $p < 0.01$ . The average coefficient was 0.216. In total, 2/45 (4%) of the coefficients could be deemed as being of high practical significance, 8/45 (18%) as being of moderate practical significance, and 35/45 (78%) as being of low practical significance, while there is missing data for eight organisations (organisations 4, 13, 24, 29, 39, 44, 47, and 53). The chains for the optimal models per organisation for IWB include 35 models with one variable, eight with two variables, one with three variables and one with five variables. Organisations 38 had the most variables (five) in its optimal model. The most common subscales were supervisor

support, and staffing, as these items appear in 11 of the 45 models. The next most common subscales were training and development, and PA, as these appear in 10 of the models, followed by compensation and rewards that appear in six of the models. Communication and information sharing was the least common variable as it appears in only five of the models. To detect evidence of sequences in the subscales predicting innovation, the two-variable models were analysed further. Repeating patterns occurred in 3/8 (38%) cases with two-variable models (supervisor support and diversity management).

## **5 Discussion**

The current literature has been criticised for not having agreement on the specific practices which drive innovation. Also, as stated before, much of the HRPs-innovation research is conducted primarily within the Western context. This study will address the matter of clarity on specific drivers of innovation as well as contextualising the research within the South African context. Furthermore, the respondents in this study represented the South African workforce well, in as far as gender, race and age were concerned. In addition, the biographical data was closely aligned with information presented in the Quarterly Labour Force Survey publication (Statistics South Africa, 2016).

Although empirical studies have uncovered a link between HRPs and innovation, the research has often been slated for being single-company or single-industry driven, and undertaken with relatively small samples. This study will use a relatively large sample to explore the relationship both within and across organisations. The sample population consists of 3 180 employees drawn from 53 organisations within South Africa, representing the private sector, parastatals, and government departments.

The majority of the research has been limited to examining HRPs as a single concept rather than as individual practices in their own right. This study will attempt to include several other HRPs in the model, and the focus in this research will be on the individual practices.

The results revealed that the relationship between HRPs (as a composite score) and individual innovation, although statistically significant, was practically insignificant. The relationship between all the individual subscales of the HRP scale and innovation was also statistically

significant but practically insignificant. It seems that the subscales are a better predictor of innovation than the aggregate scores are.

Focusing on the individual HRPs, some were more effective in predicting innovation than others. The subscales common to predicting both IIB and IWB are staffing, training and development, communication and information sharing, and supervisor support. The subscale unique to predicting IWB, on the other hand, is compensation and rewards. It is evident that four out of the seven subscales are common predictors of innovation, while only one of the seven is a unique predictor. Considering these important predictors, it is evident that PA and diversity management are neither common nor unique predictors of innovation. This is not consistent with the research conducted by Dalota and Perju (2010), Jimenez-Jimenez and Sanz-Valle (2005), and Laursen and Foss (2003), who present evidence that specific HRPs, such as PA, result in innovation.

The magnitude of the correlations between PA and IIB varied from 0.538 to 0.008, whereas the correlations between PA and IWB varied from 0.647 to 0.084. Considering the finding regarding the correlation between HRPs (as a composite score) and individual innovation within organisations, it can be concluded that a practically significant link was established in 36% of the organisations for IIB and 60% of the organisations for IWB. A statistically significant link was found in all organisations. In IIB there is low practical significance in a larger proportion of the organisations (64% of the cases), while, in IWB, there is low practical significance in 47% of the cases.

The magnitude of the regression coefficients between PA and IIB varied from 0.501 to 0.006, whereas the regression coefficients between PA and IWB varied from 0.649 to 0.004. Considering the finding in which all the individual HRP subscales were regressed to predict individual innovation within organisations, it can be concluded that a practically significant link was established in 10% of the organisations for IIB and 14% of the organisations for IWB. However, a statistically significant link was found in all the organisations. In a larger proportion of the organisations (approximately 90% of the cases), there is low practical significance in both, IIB and IWB. The low IIB and IWB coefficients, in the majority of the organisations, suggest that other factors must drive innovation. Focusing on the individual HRP subscales at organisational level, some were more effective in predicting innovation than others. It is evident that one (training and

development) out of the seven subscales is a common predictor of IIB and that two (supervisor support, and staffing) are common predictors of IWB. These elements of the HRP scale are the primary drivers of innovation. Therefore, should HRPs be the primary mechanism used to drive innovation in an organisation, focus should be placed on these abovementioned aspects.

Considering the finding regarding the importance of PA compared to other HRPs, it can be concluded that PA was a unique and significant predictor in four of the 53 organisations for IIB, and in 10 of the organisations for IWB. However, PA was the dominant antecedent in three of the 53 organisations for IIB, and in eight of the organisations for IWB. The results show that PA is the least important driver of innovation in comparison with the other HRPs, while training and development has the most significant influence on IIB within the organisations. The results also show that PA is the second most important driver of innovation in comparison with the other HRPs, while supervisor support and staffing have the most significant influence on IWB within the organisations. Although PA has a less important role to play in influencing innovation within an organisation, it is evident that training and development, supervisor support, and staffing play a much larger role in driving innovation at the organisational level. This places the relative importance of PA amongst other HRPs in perspective.

It seems that the use of the correlation approach yielded better results than the use of the regression approach. The relationship was larger when using HRPs as a total score, which is in line with research conducted by Jimenez-Jimenez and Sanz-Valle (2005) and suggests that HRP as a total score is a better predictor of innovation, and also that the total scores, rather than a latent construct, are responsible for the declared variance.

Support for the universalistic perspective was lacking in the correlation coefficients that were reported for HRP as a single construct and innovation behaviour per organisation. No consistency was found within organisations. The results of the regression analysis, where all the individual HRP subscales are regressed to predict individual innovation, also do not support the universalistic perspective. The results were inconsistent, and there were large variations between organisations.

Evidence supportive of the configurational perspective was limited, and no conclusive evidence of this was found as no specific sequences apply to all 53 organisations. The results of the regression, where all the individual HRP subscales are regressed to predict individual innovation,

show that there is partial support for the configurational perspective, as repeating patterns occur in 38% of the cases in IWB. This percentage is low and applicable only in the case of IWB. Configurational fit could not, therefore, be fully accepted as it is not applicable to all organisations.

As stated earlier, no test for the contingency fit was performed as data on the strategic positions of the different organisations were not collected in order to perform an analysis. It is interesting to note that the findings in South Africa in some regards is quite similar to those found in the Western context, and in other cases quite different.

## **6 Theoretical implications**

This study contributes to academic literature and theory on HRPs and innovation within South Africa. The study has led to an increase in knowledge and discovery on the HRPs and innovation relationship, both within organisations and across employees. The research reveals that HRPs are a driver of innovation, but that it accounts for approximately 15% of the variance in innovation when considering the sample of employees. The subscales of the HRP scale which drive innovation have been specified. Furthermore, the importance and relative importance of PA as an antecedent to innovation in the workplace has been established. It has also been established that there are other HRPs that have a far more significant influence on innovation than PA does.

Focusing on the HRPs-innovation link within organisations, the research demonstrates that PA is a driver of innovation at the organisational level, but only in some organisations. A high practically significant HRPs-innovation link was established in 8% of the organisations for IIB and 13% of the organisations for IWB. The subscales of the HRP scale which drive innovation have been specified. These were, however, found in only some organisations. To complicate matters further, it was found that the composite score of HRPs predicts innovation better than the individual subscales of the HRP scale does. This warrants further research on the psychometric properties of the HRP scale. Moreover, the absolute importance of PA and other HRPs, as well as its importance as an antecedent to innovation in the workplace, has been established. It has also been established that there are other HRPs that have a far more significant influence on innovation than PA does at the organisational level. This positioning of PA amongst other HRPs is a valuable contribution to the body of knowledge. Considering the applicability of the human resource models (universalistic, contingent, or configurational perspective), it can be reported that there is no

support for the universalistic perspective as no uniformity was found within organisations. However, there is some support for the configurational perspective as repeating patterns were found in the two-variable models, but the configurational fit could not be fully accepted as no explicit patterns apply to all 53 organisations.

## **7 Practical implications**

The outcomes of the study is likely to benefit all interested parties and may also support managers and human resource practitioners in focusing on the specific HRPs which significantly enhance innovation. Furthermore, these identified practices will enable human resource practitioners and managers to enhance their current human resource systems in an effort to enhance innovation. In addition, the magnitude of the relationship has been quantified, and the attention of human resource practitioners is drawn to the relative role of HRPs as predictors of innovation within organisations. Considering these important predictors, it is apparent that PA and diversity management are neither common nor unique predictors of innovation.

Focusing interventions on the identified aspects will enable managers and human resource practitioners to improve their existing human resource systems significantly, aligning them to enhance innovation at the organisational level. This, however, comes with a warning as, although there is some commonality, it does not apply universally. Additionally, the magnitude of the HRPs and innovation relationship has been quantified across organisations. Again, this differed widely across organisations as there are large variations between the coefficients. In very few organisations, PA is a practically significant driver of innovation. The attention of human resource professionals is thus also drawn to the relative role of PA as a predictor of innovation within organisations, relative to other HRPs.

Although this study has provided confirmation that PA has a part to play in influencing innovation within an organisation, it is evident that training and development, supervisor support, and staffing have a much greater role in driving innovation at the organisational level. It can, therefore, be recommended that human resource professionals should focus on training and development, supervisor support, and staffing, as opposed to PA or the other HRPs, and that this shift in emphasis might be at the basis of innovation in organisations. This data would allow managers to enhance innovation behaviour and increase competitive advantage accordingly.

## 8 Limitations of the study

Research is generally subject to some limitations and this investigation, in particular, was subject to a few restrictions that are noteworthy. Firstly, the research design is cross-sectional in nature. Cross-sectional studies are executed at a particular point in time and offer no indication of the sequence of events, thus making it difficult to infer causality (Levin, 2006) from the study. However, an experimental or longitudinal research design is suggested to circumvent the restrictions posed by a cross-sectional design. Secondly, the exclusive utilisation of respondents' perceptions in this study posed a restriction. The results may have been more explanatory had managers and supervisors been incorporated into the reporting or had organisational statistics, such as registered patents, been utilised. Multi-source and multi-method research is proposed. The third constraint was that the analysis was performed per organisation and a sector analysis was excluded due to the total number of organisations per sector being considered unsatisfactory for statistical analysis. It can be anticipated that the unique sequences of items that predict innovation per organisation could be confined to particular sectors in South Africa, and research in this regard is therefore suggested. Lastly, the contingency model validation was impossible as data on the strategy of the organisations was not gathered, which posed a further restriction. Future researchers are encouraged to also gather data on the present strategic positions of the organisations so as to be able to assess the applicability of all three models.

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## **Appendix E: Empirical article for objective eight**

In this article, the effect of PA on innovation was investigated by presenting empirical evidence on the link between PA and innovation, given moderation and mediation variables. The researcher addresses the eighth research objective via an empirical study in the form of the article below.

### **THE RELATIVE IMPORTANCE OF PERFORMANCE APPRAISAL ON INNOVATION, GIVEN MEDIATOR AND MODERATOR VARIABLES**

#### **Abstract**

It is evident from Western literature that performance appraisal (PA) results in innovation. However, evidence of empirical research on the different models on the PA-innovation link is seemingly lacking within the South African environment. The South African context may be unique, given the legislative framework within which PA is administered. This study offers clarity on the specific PA-innovation models within the South African context. This study used a relatively large sample of employees across several organisations. Eight variables were included in the model, namely PA, individual innovative behaviour (IIB), innovative work behaviour (IWB), proactive personality (PP), transformational leadership (TL), corporate entrepreneurship (CE), work engagement (WE), and affective commitment (AC). The results reveal that PA directly influences IIB, but not IWB. The PA-IIB relationship is mediated by WE as well as AC, with WE having the most significant effect. TL and CE moderate the PA-IIB relationship, with TL having the strongest effect and CE having almost no effect. PP does not moderate the PA-IIB relationship. Managing employees with TL practices and instilling WE may be at the root of innovation in organisations. The research contributes to the body of knowledge on the PA-innovation link, and the outcomes of this study are expected to be of value to all stakeholders and may assist managers to appropriately assign resources to particular organisational variables, thereby enhancing innovation within organisations. This evidence-based information would help managers to increase innovative behaviour, performance, competitive advantage, organisational success, growth, and organisational survival accordingly.

**Keywords:** Corporate entrepreneurship, innovation, organisational commitment, performance appraisal, proactive personality, South Africa, transformational leadership, work engagement

## 1 Background

Innovation is an essential success factor for organisations to endure the harsh business climate (Abbaspour, 2015; Akman, & Yilmaz, 2008; Aryanto, Fontana, & Afiff, 2015; Ceylan, 2013; Dalota, & Perju, 2010; Ling, & Nasurdin, 2011; Runfeng, 2011). In addition, innovation is crucial as it enables the organisation to enhance performance, competitive advantage, success, expansion and the organisations chances of continued existence (Abbaspour, 2015; Al-Ghamdi, Abdel-Razek, & Abdel-Razek, 2015; Chang, Gong, & Shum, 2011; Dalota, & Perju, 2010; Hashim, Ali, & Fawzi, 2005; Jafri, 2010; Le Bas, & Lauzikas, 2009; Ling, & Nasurdin, 2011; Maier, Brad, Nicoara, & Maier, 2014; Matthew, 2014; Ozdemicri, & Behram, 2014). Focusing on innovation may be at the root of competitive advantage in organisations (Jafri, 2010; Ryakhovskaya, Gruzina, Arsenova, Linder, & Pukhova, 2015; Wu, Sears, Coberley, Pope, 2016). By the same token, several studies (Abbaspour, 2015; Aryanto, Fontana, & Afiff, 2015; Gil-Marques, & Moreno-Luzon, 2013; Hashim, Ali, & Fawzi, 2005; Hurley, & Hult, 1998; Le Bas, & Lauzikas, 2009; Looise, & Van Riemsdijk, 2004; Matthew, 2014; Muller, Valikangas, & Merlyn, 2005; Subramaniam, & Youndt, 2005) show that innovation leads to competitive advantage and organisational growth.

There are a plethora of studies investigating and evaluating the various variables related to innovation. Some of these variables include: affective commitment (AC) (Jafri, 2010), proactive personality (PP) (Seibert, Kraimer, & Crant, 2001; Tai, & Mai, 2016; Zhang, Li, & Yu, 2014), organisational design (Michaelis, Stegmaier, & Sonntag, 2010), organisational climate (Michaelis, Stegmaier, & Sonntag, 2010; Shanker, Bhunugopan, & Fish, 2012), organisational culture (Michaelis, Stegmaier, & Sonntag, 2010; Tipu, Ryan, & Fantasy, 2012), leadership (Al-Husseini, & Elbeltagi, 2012; García-Morales, Matías-Reche, & Hurtado-Torres, 2008; Hu, Gu, & Chen, 2012; Khan, Aslam, & Riaz, 2012; Oke, Munshi, & Walumbwa, 2009; Paulsen, Callan, Ayoko, & Saunders, 2013; Tipu, Ryan, & Fantasy, 2012), work engagement (WE) (Agarwal, 2014; Agarwal, Datta, Blake-Beard, & Bhargava, 2012), performance appraisal (PA)

(Aktharsha, & Sengottuvel, 2016; Choi, Moon, & Ko, 2013; Dalota, & Perju, 2010; Ling, & Nasurdin, 2011; Runfeng, 2011), and other human resource practices (HRPs) (Aktharsha, & Sengottuvel, 2016; Dalota, & Perju, 2010; Kong, Chadee, & Raman, 2013; Matthew, 2014). It is interesting to note that these researchers used a limited number of variables in designing their research.

Several authors (e.g., Grote, 1996; Khoury, & Analoui, 2004; Murphy, Cleveland, & Hanscom, 2017; Nickols, 2007), point out that organisations invest many hours and a lot of money in PA. Nickols (2007) for instance provides an example of a South African telecommunications company in which the annual costs of PA were approximately 1.1 million US dollars. This same article also offers an example of a Western company in which the costs of staff time spent on PA were conservatively estimated to be in the region of 100 million US dollars per year (Nickols, 2007). Getting PA wrong has negative consequences: reduced employee productivity, employee disappointment, employee stress, employee depression, reduced employee morale, and diminishing motivation (Blankenship, 2002; Nickols, 2007; Scullen, 2011). Adding these psychosocial costs to the operational costs associated with PA can negatively influence an organisation's bottom line, particularly when the suitable value is not being extracted from an organisation's PA system (Khoury, & Analoui, 2004; Nickols, 2007; Scullen, 2011).

The majority of the empirical research provide evidence of a relationship between PA and innovation (e.g., Aktharsha, & Sengottuvel, 2016; Bal, Bozkurt, & Ertemsir, 2014; Choi, Moon, & Ko, 2013; Dalota, & Perju, 2010; Jimenez-Jimenez, & Sanz-Valle, 2005; Ling, & Nasurdin, 2011; Mark, & Akhtar, 2003; Runfeng, 2011; Shipton, West, Dawson, Birdi, & Patterson, 2006), and provide simple models explaining this relationship, and most of this research was conducted in the Western context. Research on the relationship between PA and innovation using more complex models and specifically investigating these relationships within the South African context is lacking. The South African context may be particularly unique as PA may need to be checked for compliance with the requirements of pertinent labour laws (Swanepoel, Erasmus, & Schenk, 2008). This study will attempt to address both the matter of clarity on the nature of specific drivers of innovation as well as contextualising the study within the South African context.

## 1.1 Research problem

The literature suggests that PA results in innovation. This link is complex, and include many other variables. The proper quantification with regard to the specific mediator and moderator variables which drive innovation is not satisfactorily explored, specifically within the South African context. Lacking this distinction of information on the PA-innovation relationship, human resources practitioners and managers may improperly assign resources to particular organisational variables, hampering organisational success.

## 1.2 Aim

This article aims to empirically test different models on the PA-innovation link, applying mediators such as work engagement (WE) and affective commitment (AC), as well as moderators such as proactive personality (PP), transformational leadership (TL) and corporate entrepreneurship (CE) climate. Ultimately, a complex data-based model of the PA-innovation link will be produced.

## 2 Literature review

Most successful organisations employ PA among other HRP to enhance organisational performance and employee efficiency (Ayers, 2013; DeNisi, & Pritchard, 2006; Esu, & Inyang, 2009; Rubin, 2011). According to Ahmed, Mohammad and Islam (2013), PA is responsible for continuous improvement within the organisational setting. The literature reflects that PA is an important HRP. For example, Boswell and Boudreau (2000), and Judge and Ferris (1993) indicate that PA is one of the main sub-practices of the nine common HRPs.

Muller, Bezuidenhout and Jooste (2011) indicate that PA is the method of witnessing and assessing an employee's performance, formally noting the evaluation, and providing feedback on key performance areas of improvement to the employee. While, Matookchund (2019) suggest a comprehensive definition of PA refers to an officially organised means that managers use annually, to gauge a subordinate's actual performance, as well as strengths and weaknesses in an effort to develop and reward the employee. PA is a commonly explored topic in human resource management. In addition, DeNisi and Pritchard (2006), as well as Siaguru (2011), indicate that almost a century has been devoted to the study of PA by human resource practitioners and

researchers. Just about all organisations make use of some sort of PA system (DeNisi, & Pritchard, 2006; Mitchell, 2010; Nankervis, & Compton, 2006).

Given the aforementioned, it is clear that PA and innovation both play a significant role within the organisational context. It is important to note that organisations with extremely effective PA methods attain substantial innovation results (Chen, & Huang, 2009). Furthermore, numerous studies indicate that there is a significant and positive relationship between PA and innovation (Aktharsha, & Sengottuvel, 2016; Bal, Bozkurt, & Ertemsir, 2014; Choi, Moon, & Ko, 2013; Dalota, & Perju, 2010; Jimenez-Jimenez, & Sanz-Valle, 2005; Ling, & Nasurdin, 2011; Mark, & Akhtar, 2003; Runfeng, 2011; Shipton, West, Dawson, Birdi, & Patterson, 2006). The aforementioned suggests that PA results in innovation.

There is an abundance of antecedents to innovation, for example, leadership styles, organisational climate, proactive personality, commitment, and engagement. Firstly, considering the link between leadership and innovation, Sethibe and Steyn (2015), for example, note that the majority of the studies fixated on TL rather than other leadership styles. According to Burns (1978), TL is a collaboration between leaders and subordinates in an effort to elevate each other's principles and motivation levels. A transformational leader is someone who motivates subordinates to achieve more than is expected (Bass, 1985). Transformational leaders inspire followers to accomplish organisational goals, stress the need for organisational change, and promote innovation (Alsalamy, Behery, & Abdullah, 2014). Also, TL has a strong and positive relationship with innovation (Al-Husseini, & Elbeltagi, 2012; Hu, Gu, & Chen, 2012; Khan, Aslam, & Riaz, 2012; Mumford, Scott, Gaddis, & Strange, 2002; Oke, Munshi, & Walumbwa, 2009; Paulsen, Callan, Ayoko, & Saunders, 2013; Sethibe, & Steyn, 2016; Tipu, Ryan, & Fantasy, 2012). In research conducted by Sethibe and Steyn (2016), for example, no direct or indirect link was established between transactional leadership and innovation. This notion is reinforced by the work led by Oke, Munshi and Walumbwa (2009) who conclude that TL is far more suitable than transactional leadership in fostering innovation.

The second variable of interest is the CE climate. CE climate is a significant topic of interest for researchers (Dess, Ireland, Zahra, Floyd, Janney, & Lane, 2003; Phan, Wright, Ucbasaran, & Tan, 2009). Hornsby, Kuratko, and Zahra (2002) define CE very broadly as the development and

implementation of fresh ideas within an organisation. While, McFadzean, O'Loughlin, and Shaw (2005) define CE as an effort to promote innovation within the organisation. CE is centred around five factors, such as management support, work discretion, rewards, time available, and organisation boundaries (Hornsby, Kuratko, & Zahra, 2002; Ireland, Kuratko, & Morris, 2006; Morris, Kuratko, & Covin, 2010). It appears that organisational climate may also be prominent in promoting innovation. Organisational climate is an essential antecedent to innovation (Michaelis, Stegmaier, & Sonntag, 2010; Nusair, 2013; Panuwatwanich, Stewart, & Mohamed, 2008; Shanker, Bhunugopan, & Fish, 2012). Several empirical studies provide evidence that there is a strong connection amongst innovation and climate (Björkdahl, & Börjesson, 2011; Lin, & Liu, 2012; Michaelis, Stegmaier, & Sonntag, 2010; Shanker, Bhunugopan, & Fish, 2012; Zhang, & Begley, 2011).

It is stated by many that the PP of employees also contributes to innovation in organisations. Bateman and Crant (1993) suggest that PP is a character trait embodying proactive behaviour. Furthermore, PP is seen as a key characteristic of employees in successful organisations. Matookhund (2019) suggests that focusing on the recruitment of proactive employees rather than managing them with TL practices may be at the root of innovation in organisations. It is not surprising, then, that employees with a PP are more likely to seek out new ways to improve their work performance and, implement new ideas (Kim, Hon, & Lee, 2010). A handful of studies (Seibert, Kraimer, & Crant, 2001; Tai, & Mai, 2016; Trost, Skerlavaj, & Anzengruber, 2016; Zhang, Li, & Yu, 2014) show that PP has a positive and strong connection with innovative behaviour. Considering the foundation for innovation, numerous studies (Fuller, & Marler, 2009; Parker, Williams, & Turner, 2006; Seibert, Kraimer, & Crant, 2001; Thomas, Whitman, & Viswesvaran, 2010), theorise that PP is the basis of innovative behaviour.

Organisational commitment may also influence innovation. Organisational commitment is regarded as a psychological state from a multi-dimensional perspective, which consists of three distinct types of commitment i.e., affective, normative and continuance commitment (Allen, & Meyer, 1990; Meyer, & Allen, 1997). The focus of this research will be on AC, as it is often this element of organisational commitment that is presented as the central element (Lamba, & Choudhary, 2013; Steyn, Bezuidenhout, & Grobler, 2017). AC is regarded as an employee's "emotional attachment to, identification with, and involvement in the organisation" (Meyer, &

Allen, 1997: 67). AC is regarded as an emotional attachment employees feel toward the organisation and their jobs, and the desire to stay loyal (Mei, Ong, & Pei, 2017; Meyer, & Allen, 1997). In a study by Jafri (2010) AC is positively related to innovative behaviour, and continuance commitment is negatively related to innovative behaviour.

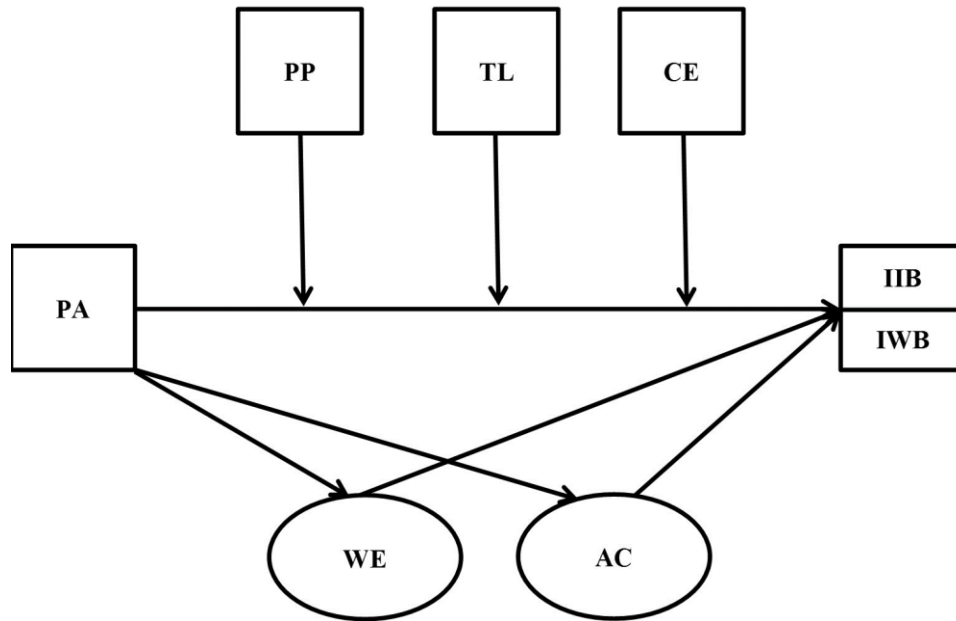
The last variable of concern in this study is WE. Many scholars have offered a definition for WE over the years, but Schaufeli, Salanova, González-Romá, and Bakker (2002) has offered the most accepted definition. Engagement is defined as a “positive, fulfilling, work-related state of mind that is characterised by vigour, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker 2002: 74). According to Agarwal (2014), and Agarwal, Datta, Blake-Beard, and Bhargava (2012), WE correlates positively with innovative work behaviour (IWB). These authors also provide evidence that WE mediates the relationship between leader-member exchange and IWB, and partially mediates intention to quit (Agarwal, Datta, Blake-Beard, & Bhargava, 2012).

TL, CE climate, PP, AC and WE are important contributors of innovation which is quite apparent from the aforementioned literature. Theoretically, considering general systems theory as well as the input-transformation-output model, which in its simplest form indicates that (Higgs, & Smith, 2006; Kast, & Rosenzweig, 1972; Teece, 2018), these variables may be related. The literature is however not clear on the nature of the relationship between these variables, particularly if they are modelled together.

## **2.1 Conceptual model**

The proposed model that was tested as part of this study for objective eight is presented in Figure 1, below. PA is the independent variable, Individual Innovative Behaviour (IIB) and IWB are the outcome variables, PP, TL, and CE are the moderators, and WE and AC are the mediators.





**Figure 1: Performance appraisal-innovation model with mediator and moderator variables**

Six models were tested with the PROCESS macro for the Statistical Package for Social Science (SPSS). PA was the independent variable in all models and two mediators (WE and AC) were included in each model. The moderators (PP, TL, and CE) were subsequently added. The dependent variable was first IIB and after that IWB. The models contained two mediators and one moderator.

## 2.2 Hypotheses

The following are the hypotheses developed in this study to address objective eight:

- Model 1: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by PP
- Model 2: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by TL
- Model 3: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by CE
- Model 4: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by PP

- Model 5: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by TL
- Model 6: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by CE

Each of the hypotheses was evaluated in the PROCESS macro for SPSS to obtain the best-fit PA-innovation model.

### **3 Method**

The research approach, measuring instruments, conceptual model, hypotheses and statistical analysis are presented in this part of the article.

#### **3.1 Research approach**

This study makes use of a cross-sectional survey design, centring on quantitative data. A quantitative research design approach is appropriate for the nature of this study as it freely permits the formation of relationships amongst variables (Bryman, 2012; Punch, 1998; Punch, 2005). This article focuses specifically on secondary data for the quantitative research analysis.

This study makes use of data that was collected as part of a research project led by the second author of this study. Only South African organisations formed part of the study. The sample for the organisations a convenience sample. Once the organisations were identified, respondents were selected at random from the organisation's employee records. The data from 3 180 employees from 53 organisations in South Africa was finally recorded. The data was collected as set out in the University of South Africa's (UNISA) ethical codes and procedures. Finally, authorisation was acquired from the UNISA Research Ethics Review Committee for the usage of the data as secondary data.

#### **3.2 Measuring instruments**

The study made use of eight instruments in the analysis, namely: the quality of a Performance Appraisal system questionnaire (Steyn, 2010), the Individual Innovative Behaviour questionnaire (Kleysen, & Street, 2001), the Innovative Work Behaviour questionnaire (De Jong, & Den

Hartog, 2010), the Utrecht Work Engagement scale-9 (Schaufeli, & Bakker, 2004), a part of the Organisational Commitment scale, specifically the Affective Commitment scale portion (Allen, & Meyer, 1990), the Proactive Personality scale (Bateman, & Crant, 1993), a part of the Leadership scale, specifically the Transformational Leadership scale portion (Wolins, 2012), and the brief Corporate Entrepreneurship assessment instrument (Strydom, 2013). In this study, two measures of individual innovation in the workplace were assessed, specifically IIB and IWB.

- The quality of a PA system questionnaire, created by Steyn (2010), was used to evaluate the perceived efficacy of PA systems in organisations. This questionnaire is based on human resource management literature (Cascio, 2010; Grobler, Warnich, Carrell, Elbert, & Hatfield, 2006; Noe, Hollenbeck, Gerhart, & Wright, 2008; Snell, & Bohlander, 2007; Swanepoel, Erasmus, & Schenk, 2008) which describes the characteristics of an effective PA system. Grobler, Warnich, Carrell, Elbert, and Hatfield (2006) provide a full list of necessities for an effective PA system, and the majority of the literature was therefore adapted from these authors. The PA questionnaire is comprised of 18 statements designed to prompt the respondent's views on the PA process. Respondents were invited to specify their views for each item on a five-point scale ranging from 1 to 5 as follows: 1 (Absolutely false – this is true in +/-10% of all cases), 2 (Somewhat false – this is true in +/-35% of all cases), 3 (Neither true nor false), 4 (Somewhat true – this is true in +/-75% of all cases), and 5 (Absolutely true – this is true in +/-90% of all cases). The lowest score that could be achieved was 18, and the highest was 90. A high score would be suggestive that a traditionally defined PA system was in place and working effectively, while a low score would suggest that the respondents were convinced that a traditionally defined PA system was not working in their organisation (Steyn, 2010). Furthermore, Steyn (2010) reports internal consistency to have a Cronbach alpha of 0.84 and significant correlations (in the expected direction) with results such as turnover intentions ( $R=0.311$ ;  $p<0.01$ ), job satisfaction ( $R=0.281$ ;  $p<0.01$ ) and employee engagement ( $R=0.318$ ;  $p<0.01$ ).
- The Individual Innovative Behaviour (IIB) questionnaire by Kleysen and Street (2001) was chosen to quantify IIB. According to Kleysen and Street (2001), there is a lack of studies on a multi-dimensional measure of IIB. The IIB questionnaire contains 14 questions, randomly itemised to avoid possible response order bias. Respondents were requested to

indicate their views for each question on a six-point scale ranging from 1 (Never) to 6 (Always). The lowest score that could be obtained was 14 and the highest 84. Each of the 14 items was prefaced with the following question: “In your current job, how often do you...” (Kleysen, & Street, 2001: 288). Kleysen and Street (2001) report that a measure of inter-correlation between the 14 questions resulted in a Cronbach alpha of 0.95 and good construct validity. All five factors are strongly correlated with each other, with the highest correlation being between application and formative investigation ( $R=0.81$ ;  $p<0.01$ ) and the lowest between championing and generativity ( $R=0.68$ ;  $p<0.01$ ). Kleysen and Street (2001) thus suggest that the 14 items can be combined into a single measure of innovative behaviour, and this was done for this research.

- The Innovative Work Behaviour (IWB) questionnaire from De Jong and Den Hartog (2010) was additionally selected as it measures IWB. The IWB questionnaire consists of 10 questions. The existing IWB questionnaire had to be modified for the purposes of this objective. No measurement scale was provided in the De Jong and Den Hartog (2010) article. A scale was therefore introduced, ranging from (0) Never to (6) Always. The lowest score that could be obtained was 0 and the highest 60. The following is a question from the original IWB questionnaire: “How often does this employee...pay attention to issues that are not part of his daily work?” (De Jong, & Den Hartog, 2010: 29). This format did not suit the study, which emphasises the views of individuals concerning their IWB. All ten items of the questionnaire were thus amended to begin “As an employee how often do you...” instead of “How often does this employee...”. De Jong and Den Hartog (2010) report that the instrument is adequately reliable (Cronbach alpha $>0.7$ ). According to De Jong and Den Hartog (2010), there is clear evidence that employee’s innovation outputs ( $R=0.35$ ;  $p<0.01$ ), participative leadership ( $R=0.25$ ;  $p<0.01$ ) and external work contacts ( $R=0.27$ ;  $p<0.01$ ) correlate with IWB and this points to good criterion validity. The adapted version of the instrument was used for this objective.
- According to Schaufeli and Bakker (2004) and Schaufeli, Bakker, and Salanova (2006) the Utrecht Work Engagement (WE) scale-9 includes the three founding facets of WE: vigour, dedication, and absorption. This questionnaire consists of nine statements (three vigour statements, three dedication statements, and three absorption statements) that are randomly

listed to avoid potential response order bias. Respondents were requested to indicate their views for each statement on a seven point scale ranging from 0 to 6 as follows: 0 (Never – never), 1 (Almost Never – a few times a year or less), 2 (Rarely – once a month or less), 3 (Sometimes – a few times a month), 4 (Often – once a week), 5 (Very Often – a few times a week), and 6 (Always – every day). Schaufeli and Bakker (2004) report that, for all nine statements, the Cronbach alpha varies from 0.85 to 0.94 (median=0.91) across studies done in nine countries. Schaufeli and Bakker (2004) further explain that the Cronbach alpha value for the total data set was 0.9. Schaufeli, Bakker, and Salanova (2006: 701) state that the “factorial validity of the WE scale was demonstrated using confirmatory factor analysis and the three scale scores have good internal consistency and test-retest reliability”.

- The Organisational Commitment scale is used to measure organisational commitment, and the questionnaire consists of 24 items. The focus of this portion of the study will be on AC rather than normative or continuance commitment, as Lamba and Choudhary (2013), as well as Wright and Kehoe (2007), indicate that AC is far more important to HRP and organisational performance. The AC scale portion of the questionnaire consists of eight items. Respondents were requested to indicate their views for each item on a scale as follows: 1 (Strongly disagree), 2 (Moderately disagree), 3 (Slightly disagree), 4 (Neither agree nor disagree), 5 (Slightly agree), 6 (Moderately agree), and 7 (Strongly agree). The minimum score on the AC scale portion of the questionnaire would be 8 and the maximum 56. A high score would indicate that respondents are of the view that there are high levels of commitment and a low score would show low commitment. Allen and Meyer (1990) report that the reliability (i.e., coefficient alpha) for the AC scale is 0.87 and the internal consistency is 0.86. While, Steyn, (2012) reports a Cronbach alpha of 0.82 for the organisation commitment scale. Allen and Meyer (1990) further explain that convergent validity is evident since the Organisational Commitment scale correlated significantly with the AC scale.
- The Proactive Personality (PP) scale, developed by Bateman and Crant (1993), is comprised of 17 statements designed to elicit the respondent’s views on proactive behaviour. Respondents were invited to indicate their views for each statement on a five-point scale ranging from 0 to 4 as follows: 0 (Strongly disagree), 1 (Disagree), 2 (Not sure),

3 (Agree), and 4 (Strongly agree). Likewise, the lowest score that could be obtained was 0 and the highest 68. Bateman and Crant (1993) report internal reliability with a Cronbach alpha of 0.89. By the same token, Bateman and Crant (1993) argue that the proactive scale was significantly correlated to all three criterion variables, which is indicative of criterion validity, while discriminant validity was exposed between the proactive scale and intelligence, neuroticism, agreeableness, openness, private self-consciousness, and locus of control.

- The Leadership scale questionnaire developed by Avolio, Bass, and Jung (1999) is used to assess transactional and transformational leadership (TL) and consists of 21 items. The focus of this portion of the study will be on TL rather than transactional leadership, as Sethibe and Steyn (2016) indicate that there is no direct relationship between transactional leadership and innovation, whereas TL is positively and significantly related to innovation. The TL scale portion of the questionnaire consists of 12 items, as described by Wolins (2012), and only this part was utilised for this research. Respondents were requested to indicate their views for each item on a five-point scale ranging from 0 (Not at all) to 4 (Frequently, if not always). The minimum score on the TL scale portion of the questionnaire would be 0 and the maximum 48. Strydom (2013) reports reliability as having a Cronbach alpha of 0.87, while Sethibe and Steyn (2016) report a Cronbach alpha of 0.94 for the TL scale portion. In a study by Antonakis, Avolio, and Sivasubramanian (2003), these authors' results indicate that the Leadership scale questionnaire is both reliable and valid.
- The brief CE assessment instrument by Strydom (2013) was chosen to quantify CE climate. The CE instrument consists of 20 items and respondents were requested to indicate their views for each item on a scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). The minimum score on the CE instrument would be 20 and the maximum 100. A high score would indicate that respondents are of the view that there are high levels of entrepreneurial support in the organisation, while a low score would show low support for entrepreneurship (Strydom, 2013). Strydom (2013) reports an adequate reliability score (Cronbach alpha=0.810) for the total CE instrument, while also reporting Cronbach alphas of 0.731, 0.825, 0.740, 0.689, and 0.574 for the subsections management support, work

discretion, rewards, time available, and organisation boundaries respectively. Outcomes with regard to the organisation boundaries subsection should be viewed with some caution, particularly due to its Cronbach alpha being below 0.6. Entrepreneurial spirit intensifies with a rise in employee engagement, commitment, and job satisfaction and this is indicative of concurrent validity (Strydom, 2013). Furthermore, Strydom (2013) reports that, when the factor analysis was concluded, all items loaded as expected, with values above 0.5 suggesting factorial validity for the CE instrument.

### **3.3 Statistical analysis**

First, the standard SPSS was employed to compute demographic characteristics, descriptive, reliability, and validity statistics. Then, the PROCESS macro for SPSS was used for the conceptual model assessment.

For descriptive statistics, frequencies and percentages were calculated to provide respondents demographic characteristics. Then, basic descriptive statistics were calculated for the independent and dependant variables. These included means and standard deviations. Cronbach alpha coefficient as a measure of internal consistency was also calculated to confirm the reliability of all constructs of the validated instruments. Bhatnagar, Kim, and Many (2014), Hair, Black, Babin, and Anderson (2009), and Montshiwa and Moroke (2014) recommend that reliability is suitable when the alpha is greater than 0.6. Therefore, all instruments with a Cronbach alpha above 0.6 were deemed to hold satisfactory reliability.

The mediation and moderation models were assessed with the PROCESS macro for SPSS developed by (Hayes, 2013). PROCESS performs centring automatically and also utilises bootstrapping to calculate standard errors and confidence levels for the significance of effects.

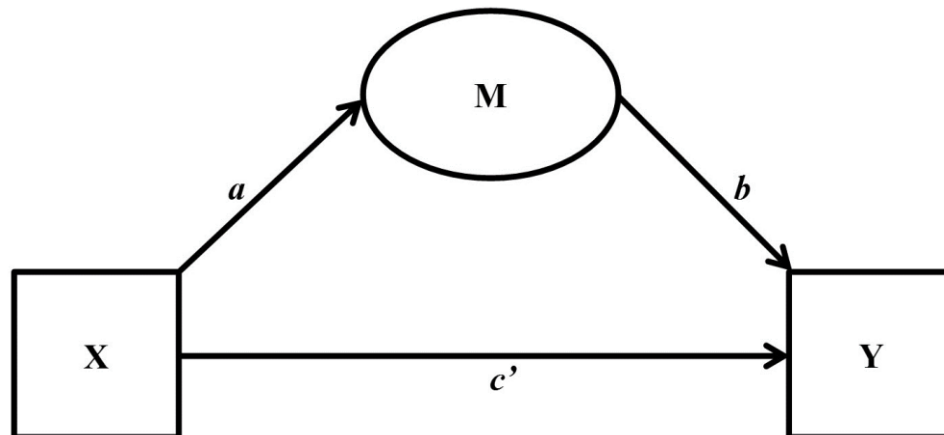
Model estimation in PROCESS is typically undertaken with ordinary least squares regression-based path analysis, but it is taken further with conditional process analysis, a class of models that allows mechanisms (i.e., indirect effects in a path model) to vary systematically as a function of one or more moderator variables. Latent variables were not modelled in PROCESS as in Structural Equation Modelling but rather the calculated averages.

The Sobel test was used to test the significance of the mediation effect. The cut-off point for statistical significance was taken as  $p < 0.01$ . Preacher and Hayes (2004) indicate that the Sobel test functions well only in large samples, and the sample size in this study is relatively large ( $N = 3180$ ).

### Application of basic mediation analysis

Baron and Kenny (1986) identify a variable to be a mediator to the extent that it accounts for the relation between the predictor (i.e., PA) and the criterion (i.e., IIB). A sample of the statistical diagram for the PROCESS model for basic mediation is shown in Figure 2 below. Baron and Kenny (1986) subsequently suggest that a variable, e.g., WE may be considered a mediator if the following criteria are met:

- Steps
1. X significantly predicts Y (i.e.,  $c \neq 0$ )
  2. X significantly predicts M (i.e.,  $a \neq 0$ )
  3. M significantly predicts Y controlling for X (i.e.,  $b \neq 0$ )
  4. The effect of X on Y decreases substantially when M is entered simultaneously with X as a predictor of Y (i.e.,  $c' \ll c$ ) (The cut-off point was taken as  $p < 0.01$ )



**Figure 2: Sample statistical diagram for PROCESS model 4 (Basic mediation model)**

Preacher and Hayes (2008) summarise the preceding paragraph, explaining that these criteria essentially require paths a, b, and c to be significant and  $c'$  to be smaller than c by a non-trivial amount. Considering point one (Hayes, 2012), suggest that modern thinking about mediation analysis does not require evidence of a total effect prior to the estimation of direct and indirect effects.



The causal variable was set as X, i.e., PA, and the outcome variable, or Y variable, as IIB. Finally, the mediator, i.e., M, represent WE. The basic mediational model is described as the variable X is presumed to cause M, which in turn is presumed to cause Y. If there were complete mediation, then the causal effect of X on Y controlling for M would be zero. For the estimates below to be valid, it is assumed that there is no measurement error in M. Moreover, it is assumed that there are no unmeasured common causes of M and Y. Finally, it is assumed that Y does not cause M (Kenny, & Judd, 2014).

In this study, the models that were tested contained two mediators and one moderator as illustrated in Figure 1.

## **4 Results**

### **4.1 Respondents demographic characteristics**

In this study, the data was drawn from the responses of 3 180 employees from 53 organisations within South Africa, representing the private sector, parastatals, and government departments.

**Gender:** The respondents in this study were categorised into the two recognised gender groups. The 2016 Quarterly Labour Force Survey shows that the gender demographic across South Africa as a whole is almost equally spread (Statistics South Africa, 2016), and this is very much in line with the gender sample in this study. A total of 1 771 (55.7%) respondents listed their gender as male and 1 372 (43.1%) registered their gender as female, while the missing data amounted to 37 (1.2%).

**Race:** In this study, respondents were categorised into four well-known race groups and this data is in line with the Quarterly Labour Force Survey in the sense that, in the larger South African context, Blacks make up the major workforce group, followed by Whites, Coloureds, and Asians in descending order (Statistics South Africa, 2016). A total of 263 (8.3%) respondents marked Asian, 1 830 (57.5%) Black, 263 (8.3%) Coloured, and 787 (24.7%) White, while the missing data is 37 (1.2%) in this study.

**Age:** The 2016 Quarterly Labour Force Survey indicates that the age of the South African workforce ranges from 15 to 64 years (Statistics South Africa, 2016), and this closely lines up to

the respondents in this study whose ages range from 20 to 72 years, with a mean of 37.81 and a standard deviation of 9.10.

**Educational qualifications:** A total of 934 (29.4%) respondents hold a bachelor's degree or higher, 1 274 (40.1%) possess a diploma, 789 (24.8%) have matric, and 143 (4.5%) have less than 12 years of schooling, while the missing data is 40 (1.3%).

**Management and tenure:** Those in management positions totalled 1 156 (36.4%) and those in non-management positions represented 1 983 (62.4%), while the missing data was 41 (1.3%). As far as tenure at their present company is concerned, this varied between one month and 42 years, with a mean of 8.49 and a standard deviation of 7.45.

**Job categorisation:** In this study, respondents were grouped into five job sets. A total of 72 (2.3%) respondents form part of an unskilled and defined decision-making group, 626 (19.7%) form part of a semi-skilled and discretionary decision-making group, 1 359 (42.7%) are skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents, 893 (28.1%) are professionally qualified, experienced specialists and middle management, and 163 (5.1%) are members of top or senior management, while the missing data is 67 (2.1%). Respondents in core businesses totaled 1 432 (45.0%), and those in support businesses represented 1 730 (54.4%), while the missing data was 18 (0.6%).

**Economic sectors:** In this study, the organisations were categorised into three sectors. A total of 1 981 (62.3%) companies fall within the private sector, 480 (15.1%) are parastatal, and 719 (22.6%) are government departments, for example, the Department of Trade and Industry, the Department of Tourism, and so on.

From the abovementioned respondents' demographic characteristics, it is evident that the respondents represent a broad cross-section of the South African workforce.

## **4.2 Descriptive data**

Presented in Table 1 is the total number of observations, means, standard deviations and Cronbach alphas of all variables contained within this study.

**Table 1: Descriptive data (N=3 180)**

Scale	Item content	Observations	Mean	Std. Dev.	$\alpha$
PA	Performance Appraisal	3180	58.133	16.072	0.930
IIB	Individual Innovative Behaviour	3180	36.662	9.608	0.951
IWB	Innovative Work Behaviour	3180	52.988	13.173	0.893
PP	Proactive Personality	3180	53.792	8.971	0.843
CE	Corporate Entrepreneurship	3180	65.743	9.321	0.762
TL	Transformational Leadership	3139	2.516	0.972	0.946
WE	Work Engagement	3180	37.998	10.156	0.900
AC	Affective Commitment	3180	34.318	9.947	0.806

The means and standard deviations presented in Table 1 can serve as baseline information for future studies. The reliability information presented in the last column of Table 1 is important in this study and will be discussed below.

### 4.3 Reliability

Also illustrated in Table 1 above, the PA instrument registers a high Cronbach alpha of 0.930. Reliability was computed for the IIB instrument, as well as the IWB instrument, which resulted in Cronbach alphas of 0.951 and 0.893 respectively. Reliability for the PP instrument was 0.843 and, for the CE instrument, the Cronbach alpha was 0.762. Also, reliability for the TL instrument was 0.946 and, for the WE instrument was 0.900. Lastly, for the AC instrument, the resulting Cronbach alpha was 0.806. All eight instruments have a Cronbach alpha above 0.6, which suggests that the reliability of all instruments is acceptable.

### 4.4 Validity

The statistical analysis to test validity revealed that the 14-item IIB instrument correlated significantly (with a large effect) with the 10-item IWB instrument ( $R = 0.683$ ;  $p < 0.01$ ) which is evidence of convergent validity. The IIB instrument correlated with the PA questionnaire ( $R = 0.196$ ;  $p < 0.01$ ), and the IWB instrument correlated with the PA instrument ( $R = 0.239$ ;  $p < 0.01$ ). This provided some support for divergent validity and the confidence to proceed with further hypothesis testing on the PA and innovation relationship.

### 4.5 Model assessment results

The output of the mediation and moderation analysis is presented below, per hypothesis.

**Model 1: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by PP**

Baron and Kenny's (1986) four steps for mediation are summarised below (supported by the Sobel test):

Step 1: The effect of the independent variable (PA) on the dependent variable (IIB) is equal to 0.0524 ( $p < 0.0001$ ), with a 95% confidence interval of 0.0256 to 0.0791. PA has a non-zero relationship with IIB.

Step 2: The effect of PA on WE is equal to 0.2338 ( $p < 0.0001$ ), with a 95% confidence interval of 0.2133 to 0.2543. The effect of PA on AC is equal to 0.2599 ( $p < 0.0001$ ), with a 95% confidence interval of 0.2401 to 0.2797. PA has a non-zero relationship with both WE and AC.

Step 3: The effect of WE on IIB controlling for PA is equal to 0.2970 ( $p < 0.0001$ ), with a 95% confidence interval of 0.2516 to 0.3425. The effect of AC on IIB controlling for PA is equal to 0.1322 ( $p < 0.0001$ ), with a 95% confidence interval of 0.0872 to 0.1771. Both WE and AC have a non-zero relationship with IIB.

Step 4: The effect of PA on IIB controlling for both WE and AC is equal to 0.0522 ( $p < 0.0001$ ), with a 95% confidence interval of 0.0254 to 0.0789 and a total mediation effect of 0.1038 (indirect effect).

Effects (WE and AC): The bootstrap estimated indirect effect of both mediators of PA on IIB is equal to 0.1038, and the direct effect is equal to 0.0522. The 95% bias-corrected bootstrap confidence interval (5000 trials) for the indirect effect is 0.0882 to 0.1208, and since zero is not in the confidence interval, it can be concluded that the indirect effect is significantly different from zero.

Summary: The direct effect from PA to IIB equals 0.0524 and is statistically significant ( $p < 0.0001$ ). The indirect effect from PA to IIB equals 0.1038 and is statistically significant. There is evidence of mediation of the effect of PA on IIB given that the indirect effect is statistically significant. The findings are supported by the (WE) Sobel  $z$  value of 15.6373 ( $p < 0.0001$ ), and the

(AC) Sobel  $z$  value of 10.1179 ( $p < 0.0001$ ). The interaction is equal to 0.0013 ( $p < 0.3232$ ) which denotes that PP has a weak moderation effect, and it is also not significant.

**Model 2: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by TL**

Baron and Kenny's (1986) four steps for mediation are summarised below (supported by the Sobel test):

Step 1: The effect of PA on IIB is equal to 0.0812 ( $p < 0.0001$ ), with a 95% confidence interval of 0.0486 to 0.1138. PA has a non-zero relationship with IIB.

Step 2: The effect of PA on WE is equal to 0.2375 ( $p < 0.0001$ ), with a 95% confidence interval of 0.2169 to 0.2581. The effect of PA on AC is equal to 0.2628 ( $p < 0.0001$ ), with a 95% confidence interval of 0.2429 to 0.2828. PA has a non-zero relationship with both WE and AC.

Step 3: The effect of WE on IIB controlling for PA is equal to 0.4487 ( $p < 0.0001$ ), with a 95% confidence interval of 0.3999 to 0.4976. The effect of AC on IIB controlling for PA is equal to 0.0868 ( $p < 0.0006$ ), with a 95% confidence interval of 0.0371 to 0.1365. Both WE and AC have a non-zero relationship with IIB.

Step 4: The effect of PA on IIB controlling for both WE and AC is equal to 0.0697 ( $p < 0.0001$ ), with a 95% confidence interval of 0.0381 to 0.1014 and a total mediation effect of 0.1294 (indirect effect).

Effects (WE and AC): The bootstrap estimated indirect effect of both mediators of PA on IIB is equal to 0.1294, and the direct effect is equal to 0.0697. The 95% bias-corrected bootstrap confidence interval (5000 trials) for the indirect effect is 0.1111 to 0.1493, and since zero is not in the confidence interval, it can be concluded that the indirect effect is significantly different from zero.

Summary: The direct effect from PA to IIB equals 0.0812 and is statistically significant ( $p < 0.0001$ ). The indirect effect from PA to IIB equals 0.1294 and is statistically significant. There is evidence of mediation of the effect of PA on IIB given that the indirect effect is statistically significant. The findings are supported by the (WE) Sobel  $z$  value of 15.6373 ( $p < 0.0001$ ), and the

(AC) Sobel  $z$  value of 10.1179 ( $p < 0.0001$ ). The interaction is equal to 0.0816 ( $p < 0.0001$ ) which denotes that TL has a strong moderation effect, and it is also significant.

**Model 3: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by CE**

Baron and Kenny's (1986) four steps for mediation are summarised below (supported by the Sobel test):

Step 1: The effect of PA on IIB is equal to 0.0596 ( $p < 0.0001$ ), with a 95% confidence interval of 0.0301 to 0.0891. PA has a non-zero relationship with IIB.

Step 2: The effect of PA on WE is equal to 0.2338 ( $p < 0.0001$ ), with a 95% confidence interval of 0.2133 to 0.2543. The effect of PA on AC is equal to 0.2599 ( $p < 0.0001$ ), with a 95% confidence interval of 0.2401 to 0.2797. PA has a non-zero relationship with both WE and AC.

Step 3: The effect of WE on IIB controlling for PA is equal to 0.4371 ( $p < 0.0001$ ), with a 95% confidence interval of 0.3884 to 0.4857. The effect of AC on IIB controlling for PA is equal to 0.0715 ( $p < 0.0040$ ), with a 95% confidence interval of 0.0228 to 0.1202. Both WE and AC have a non-zero relationship with IIB.

Step 4: The effect of PA on IIB controlling for both WE and AC is equal to 0.0579 ( $p < 0.0001$ ), with a 95% confidence interval of 0.0284 to 0.0874 and a total mediation effect of 0.1208 (indirect effect).

Effects (WE and AC): The bootstrap estimated indirect effect of both mediators of PA on IIB is equal to 0.1208, and the direct effect is equal to 0.0579. The 95% bias-corrected bootstrap confidence interval (5000 trials) for the indirect effect is 0.1026 to 0.1404, and since zero is not in the confidence interval, it can be concluded that the indirect effect is significantly different from zero.

Summary: The direct effect from PA to IIB equals 0.0596 and is statistically significant ( $p < 0.0001$ ). The indirect effect from PA to IIB equals 0.1208 and is statistically significant. There is evidence of mediation of the effect of PA on IIB given that the indirect effect is statistically significant. The findings are supported by the (WE) Sobel  $z$  value of 15.6373 ( $p < 0.0001$ ), and the

(AC) Sobel  $z$  value of 10.1179 ( $p < 0.0001$ ). The interaction is equal to 0.0098 ( $p < 0.0001$ ) which denotes that CE has a weak moderation effect, and it is also significant.

**Model 4: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by PP**

Baron and Kenny's (1986) four steps for mediation are summarised below (supported by the Sobel test):

Step 1: The effect of PA on IWB is equal to 0.0052 ( $p < 0.6008$ ), with a 95% confidence interval of -0.0142 to 0.0246.

Summary: The model did not pass step 1 of the Baron and Kenny (1986) four-step assessment as the cut-off point was taken as  $p < 0.01$ .

**Model 5: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by TL**

Baron and Kenny's (1986) four steps for mediation are summarised below (supported by the Sobel test):

Step 1: The effect of PA on IWB is equal to 0.0265 ( $p < 0.0258$ ), with a 95% confidence interval of 0.0032 to 0.0499.

Summary: The model did not pass step 1 of the Baron and Kenny (1986) four-step assessment as the cut-off point was taken as  $p < 0.01$ .

**Model 6: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by CE**

Baron and Kenny's (1986) four steps for mediation are summarised below (supported by the Sobel test):

Step 1: The effect of PA on IWB is equal to 0.0095 ( $p < 0.3788$ ), with a 95% confidence interval of -0.0117 to 0.0308.

Summary: The model did not pass step 1 of the Baron and Kenny (1986) four-step assessment as the cut-off point was taken as  $p < 0.01$ .

The overall results of the model assessment is summarised in Table 2 below.

**Table 2: Summary of the hypothesised results**

<b>Hypothesis</b>	<b>Results</b>
Model 1: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by PP	Partially rejected. Main effect: Mediation; No moderation.
Model 2: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by TL	Fully accepted. Main effect: Mediation; Moderation.
Model 3: The relationship between PA and IIB (where PA relate to IIB) is mediated by WE and AC, and moderated by CE	Fully accepted. Main effect: Mediation; Moderation.
Model 4: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by PP	Fully rejected. The PA-IWB relationship was not significant.
Model 5: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by TL	Fully rejected. The PA-IWB relationship was not significant.
Model 6: The relationship between PA and IWB (where PA relate to IWB) is mediated by WE and AC, and moderated by CE	Fully rejected. The PA-IWB relationship was not significant.

As can be seen from Table 2 above, some of the hypotheses related to IIB were accepted whereas all the hypotheses related to IWB were rejected. The strongest model was Model 2, providing the best evidence of the relationship between the selected variables. TL and WE are thus the primary concerns in an optimal PA-innovation model.

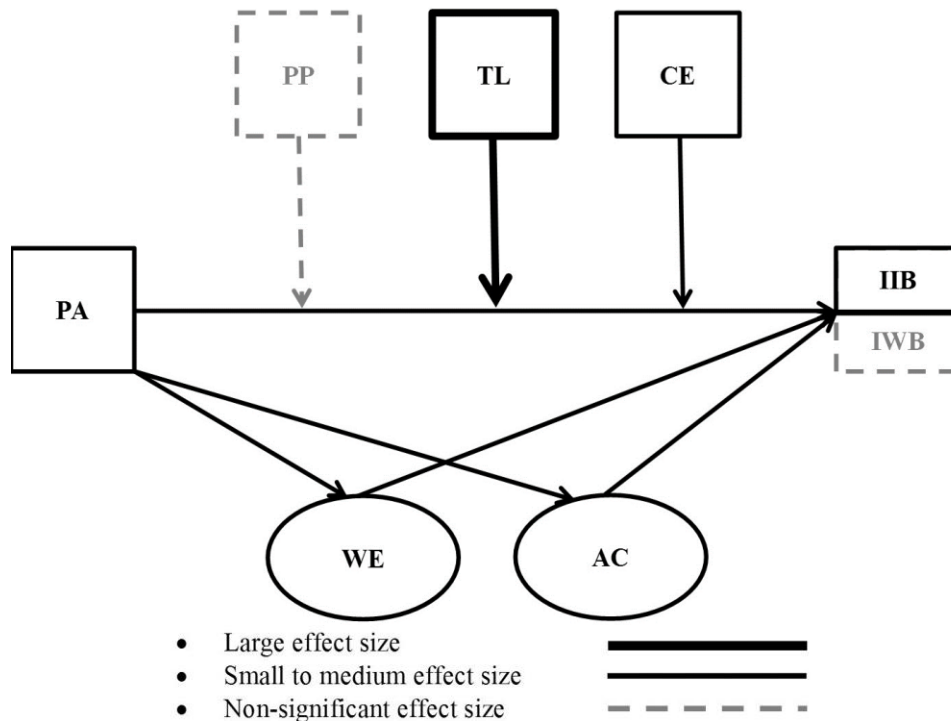
## 5 Discussion

Although many models on the PA-innovation link are available, complex models are limited. Some of these complex models were tested in this study. The South African context may be unique, given the legislative framework within which PA is administered. Evidence of empirical research testing different complex models on the PA-innovation relationship is seemingly lacking, particularly so within the South African environment. This study provided clarity on the specific PA-innovation models applicable within the South African context.



The respondents represented the South African workforce well, in as far as gender, race, and age were concerned. In addition, the demographic characteristics of the respondents were closely related to the information presented in the Quarterly Labour Force Survey publication (Statistics South Africa, 2016). This study used a relatively large sample consisting of 3 180 employees from 53 organisations for the analysis.

Eight variables were included in the model, namely PA, IIB, IWB, PP, TL, CE, WE, and AC. The results reveal that PA directly influences IIB, but not IWB. The PA-IIB relationship is mediated by WE as well as AC, with WE having the greatest effect. TL and CE moderate the PA-IIB relationship, with TL having the strongest effect and CE having almost no effect. This is consistent with the research conducted by Al-Husseini and Elbeltagi (2012), Hu, Gu and Chen (2012), Khan, Aslam and Riaz (2012), Mumford, Scott, Gaddis and Strange (2002), Oke, Munshi and Walumbwa (2009), Paulsen, Callan, Ayoko and Saunders (2013), Sethibe and Steyn (2016), and Tipu, Ryan and Fantazy (2012). Several empirical studies provide evidence that there is a strong connection amongst innovation and climate (Björkdahl, & Börjesson, 2011; Lin, & Liu, 2012; Michaelis, Stegmaier, & Sonntag, 2010; Shanker, Bhunugopan, & Fish, 2012; Zhang, & Begley, 2011), which is not aligned with the findings in this study. PP does not moderate the PA-IIB relationship, which is inconsistent with the findings of studies by Seibert, Kraimer and Crant (2001), Tai and Mai (2016), Trost, Skerlavaj and Anzengruber (2016), and Zhang, Li and Yu, (2014). The results showed an enhancing effect, as PA and TL increased, IIB increased. None of the models for IWB passed step 1 of the Baron and Kenny (1986) four-step assessment. These models or hypotheses were therefore rejected. Presented in Figure 3 is a revised model on the PA-innovation link.



**Figure 3: Revised performance appraisal-innovation model with mediators and moderators**

In Figure 3, PP and IWB are the grey dotted parts of the model, as these stated models did not materialise. Application of the present statistical analytical tools revealed that PA directly influences IIB. However, it does not directly influence IWB. These two measures (IIB and IWB) are similar with regards to the concepts they measure. The rating scales are also similar. However, the more complex analyses revealed different outcomes. Conceptually (IIB and IWB) the two measures of individual innovation in the workplace, may measure different constructs. This should be a matter of interest for future researchers.

The study shows the importance of including WE, AC and especially TL when investigating the relationships between PA and IIB. The results indicate the importance of using PA to enhance IIB. According to Agarwal (2014), and Agarwal, Datta, Blake-Beard and Bhargava (2012), WE correlates positively with IWB, and also mediates the relationship between leader-member exchange and IWB. These researchers' findings are not consistent with the findings in this study. In a study by Jafri (2010), AC is positively related to innovative behaviour which is partially aligned with the findings in this study, specifically in the case of IIB.

It is evident that TL has a much bigger part to play in enhancing innovation. Managing employees with TL practices and instilling WE may be at the root of innovation in organisations. According to the literature, PP is theorised to be the basis of innovative behaviour (Fuller, & Marler, 2009; Parker, Williams, & Turner, 2006; Seibert, Kraimer, & Crant, 2001; Thomas, Whitman, & Viswesvaran, 2010), which is inconsistent with the findings of this study. The revised model makes a significant contribution to understanding the PA-innovation link.

## **6 Theoretical implications**

The relationship between PA and innovation and the various variables included in the model was justified through general systems theory as well as the input-transformation-output model. Not all variables were found to contribute equally to innovation, and the nature of the contribution was specified. The research thus contributes to academic literature and theory on the PA-innovation link within the South African context, where no prior studies of this nature, complexity, and using this method has been conducted in one report. This study has led to an increase in knowledge and the unveiling of optimal models on the PA and innovation relationship. A valuable contribution to the body of knowledge was made as a best-fit PA-innovation model has been specified. Applying a specific set of mediator and moderator variables to enhance innovation is evident.

## **7 Practical implications**

The outcomes of this study are expected to be of value to all stakeholders and may perhaps assist human resources practitioners and managers to appropriately assign resources to particular organisational variables, thereby enhancing innovation within organisations. It is evident that TL has a much larger role to play in enhancing innovation than PP or CE. Recruitment of proactive employees, managing these employees with TL practices and instilling a culture of CE may be at the root of innovation in organisations. However, managers should focus on managing employees with TL practices to effectively drive innovation within the organisation as TL has the largest positive impact on the PA-innovation relationship. This evidence-based information would assist managers to increase innovative behaviour, performance, competitive advantage, organisational success, growth, and organisational survival accordingly.

## 8 Limitations of the study

It is advisable to acknowledge the various restrictions of a study when interpreting the outcomes of that study. This investigation was subject to several particular limitations that merit declaring. The first limitation is that it makes use of a cross-sectional survey design, focusing on quantitative data. Levin (2006) proposes that cross-sectional studies are carried out at a specific point in time and offer no hint of the sequence of events, thus making it impossible to infer causality from the study. However, to overcome the limitations of a cross-sectional study, a longitudinal or experimental design is proposed. Only respondents' perceptions were used which posed the second limitation in this study. Had managers or supervisors been included in the reporting, or had organisational statistics, such as registered patents, been used, the results may have been more explanatory. Therefore, multi-source and multi-method research is suggested to future researchers. Respondents represented the South African labour-force as a single unit was the third constraint. Thus, additional research is suggested in this regard as it can be anticipated that there might be differences per organisation and also sector-wide.

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## Appendix F: The quality of a performance appraisal (PA) system questionnaire

The following questions relate to the PA system of your organisation. Read each of the following statements and decide how true it is for you or at the company where you are presently employed.

<b>Absolutely false</b>	<b>Somewhat false</b>	<b>Neither true nor false</b>	<b>Somewhat true</b>	<b>Absolutely true</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>(this is true in +/-10% of all cases)</b>	(this is true in +/-35% of all cases)		(this is true in +/-75% of all cases)	(this is true in +/-90% of all cases)

	<b>Question</b>	<b>Answer</b>
<b>1</b>	The PA system at my organisation is the primary mechanism used to assess the performance of the employees.	_____
<b>2</b>	I received formal training on the PA system used by my organisation and understand the system fully.	_____
<b>3</b>	The consequences and rewards allocated are reflective of the individuals' scores or rating on the PA system.	_____
<b>4</b>	All the performance targets set and recorded on the PA system add significant value to the success of the business.	_____
<b>5</b>	Only elements relevant to the success in my job are assessed and all elements relevant to success in my job are included in the performance standard.	_____
<b>6</b>	My manager consistently gives me higher or lower marks than what a fair rater would do.	_____
<b>7</b>	When my performance stays consistent, but factors beyond my control cause a decline in my outputs, my PA remains consistent.	_____
<b>8</b>	The PA system is not biased and differentiates between the more effective and less effective performers.	_____
<b>9</b>	The PA system in my organisation is easy to administer, from the perspective of both the manager and the subordinate.	_____
<b>10</b>	The PA system is accepted and supported by all parties in my organisation.	_____
<b>11</b>	The decisions that are made on the grounds of the PAs are relevant, sound and do not often lead to labour disputes.	_____
<b>12</b>	The PA system is well aligned with the business strategy.	_____
<b>13</b>	Managers negotiate each of their team member's specific, measurable and stretching performance targets.	_____
<b>14</b>	Managers regularly review both unit and individual performance with those concerned and take appropriate action to ensure that targets are reached or exceeded.	_____
<b>15</b>	The effectiveness of the performance management system is formally evaluated at least once a year and appropriate improvements are made for the next cycle.	_____

<b>16</b>	My input is taken into consideration for the improvements of the PA system for the next cycle.	_____
<b>17</b>	Continuous assessment of my performance is being done regularly and recorded.	_____
<b>18</b>	Formal feedback on my final PAs feedback is given by my manager.	_____

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## Appendix G: The individual innovative behaviour (IIB) questionnaire

Rate the following according to how often you exhibit the mentioned behaviour in your work.

<b>Never</b>	<b>Almost Never</b>	<b>Sometimes</b>	<b>Fairly Often</b>	<b>Very Often</b>	<b>Always</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>

	Question	Answer
<b>1</b>	In your current job, how often do you ... look for opportunities to improve an existing process, technology, product, service or work relationship?	_____
<b>2</b>	In your current job, how often do you ... recognise opportunities to make a positive difference in your work, department, organisation or with customers?	_____
<b>3</b>	In your current job, how often do you ... pay attention to non-routine issues in your work, department, organisation or the market place?	_____
<b>4</b>	In your current job, how often do you ... generate ideas or solutions to address problems?	_____
<b>5</b>	In your current job, how often do you ... define problems more broadly in order to gain insight into them?	_____
<b>6</b>	In your current job, how often do you ... experiment with new ideas and solutions?	_____
<b>7</b>	In your current job, how often do you ... test-out ideas or solutions to address unmet needs?	_____
<b>8</b>	In your current job, how often do you ... evaluate the strengths and weaknesses of new ideas?	_____
<b>9</b>	In your current job, how often do you ... try to persuade others of the importance of a new idea or solution?	_____
<b>10</b>	In your current job, how often do you ... push ideas forward so that they have a chance to become implemented?	_____
<b>11</b>	In your current job, how often do you ... take the risk to support new ideas?	_____
<b>12</b>	In your current job, how often do you ... implement changes that seem to be beneficial?	_____
<b>13</b>	In your current job, how often do you ... work the bugs out of new approaches when applying them to an existing process, technology, product or service?	_____
<b>14</b>	In your current job, how often do you ... incorporate new ideas for improving an existing process, technology, product or service into daily routines?	_____

## Appendix H: The innovative work behaviour (IWB) questionnaire

Rate the following according to how often you exhibit the mentioned behaviour in your work.

<b>Never</b>	<b>Almost Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Very Often</b>	<b>Always</b>
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>

	Question	Answer
<b>1</b>	As an employee how often do you pay attention to issues that are not part of your daily work?	_____
<b>2</b>	As an employee how often do you wonder how things can be improved?	_____
<b>3</b>	As an employee how often do you search out new working methods, techniques or instruments?	_____
<b>4</b>	As an employee how often do you generate original solutions for problems?	_____
<b>5</b>	As an employee how often do you find new approaches to execute tasks?	_____
<b>6</b>	As an employee how often do you make important organisational members enthusiastic for innovative ideas?	_____
<b>7</b>	As an employee how often do you attempt to convince people to support an innovative idea?	_____
<b>8</b>	As an employee how often do you systematically introduce innovative ideas into work practices?	_____
<b>9</b>	As an employee how often do you contribute to the implementation of new ideas?	_____
<b>10</b>	As an employee how often do you put effort into the development of new things?	_____

**Appendix I: The proactive personality (PP) scale**

<b>Strongly disagree</b>	<b>Disagree</b>	<b>Not sure</b>	<b>Agree</b>	<b>Strongly Agree</b>
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

	<b>Question</b>	<b>Answer</b>
<b>1</b>	I am constantly on the lookout for new ways to improve my life	_____
<b>2</b>	I feel driven to make a difference in my community, and maybe the world	_____
<b>3</b>	I tend to let others take initiative to start new projects	_____
<b>4</b>	Wherever I have been, I have been a powerful force for constructive change	_____
<b>5</b>	I enjoy facing and overcoming obstacles to my ideas	_____
<b>6</b>	Nothing is more exciting than seeing my ideas turn into reality	_____
<b>7</b>	If I see something I don't like, I fix it	_____
<b>8</b>	No matter what the odds, if I believe in something I will make it happen	_____
<b>9</b>	I love being a champion for my ideas, even against others opposition	_____
<b>10</b>	I excel at identifying opportunities	_____
<b>11</b>	I am always looking for better ways to do things	_____
<b>12</b>	If I believe in an idea, no obstacle will prevent me from making it happen	_____
<b>13</b>	I love to challenge the <i>status quo</i>	_____
<b>14</b>	When I have a problem, I tackle it head-on	_____
<b>15</b>	I am great at turning problems into opportunities	_____
<b>16</b>	I can spot a good opportunity long before others can	_____
<b>17</b>	If I see someone in trouble, I help out any way I can	_____

## Appendix J: The leadership scale

This questionnaire provides a description of your managers' leadership style. Twenty one descriptive statements are listed below. Judge how frequently each statement fits him / her. The word "others" may mean your managers' followers, clients, or group members.

<b>Not at all</b>	<b>Once in a while</b>	<b>Sometimes</b>	<b>Fairly often</b>	<b>Frequently, if not always</b>
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

	Question	Answer
<b>1</b>	My manager make others feel good to be around him / her.	_____
<b>2</b>	My manager expresses with a few simple words what we could and should do.	_____
<b>3</b>	My manager enables others to think about old problems in new ways.	_____
<b>4</b>	My manager help others develop themselves.	_____
<b>5</b>	My manager tells others what to do if they want to be rewarded for their work.	_____
<b>6</b>	My manager is satisfied when others meet agreed upon standards.	_____
<b>7</b>	My manager is content to let others continue working in the same way as always.	_____
<b>8</b>	Others have complete faith in my manager.	_____
<b>9</b>	My manager provides appealing images about what we can do.	_____
<b>10</b>	My manager provides others with new ways of looking at puzzling things.	_____
<b>11</b>	My manager let others know how my manager thinks they are doing.	_____
<b>12</b>	My manager provides recognition/rewards when others reach their goals.	_____
<b>13</b>	As long as things are working, my manager does not try to change anything.	_____
<b>14</b>	Whatever others want to do is O.K. with my manager.	_____
<b>15</b>	Others are proud to be associated with my manager.	_____
<b>16</b>	My manager helps others find meaning in their work.	_____
<b>17</b>	My manager gets others to rethink ideas that they had never questioned before.	_____
<b>18</b>	My manager gives personal attention to others who seem rejected.	_____
<b>19</b>	My manager call attention to what others can get for what they accomplish.	_____
<b>20</b>	My manager tells others the standards they have to know to carry out their work.	_____
<b>21</b>	My manager asks no more of others than what is absolutely essential.	_____

**Appendix K: The brief corporate entrepreneurship (CE) assessment instrument**

<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Not sure (uncertain)</b>	<b>Agree</b>	<b>Strongly Agree</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

	<b>Question</b>	<b>Answer</b>
<b>1</b>	Individual risk takers are often recognised for their willingness to champion new projects, whether eventually successful or not.	_____
<b>2</b>	People are often encouraged to take calculated risks with new ideas around here.	_____
<b>3</b>	Many top managers have been known for their experience with the innovation process.	_____
<b>4</b>	This organisation supports many small and experimental projects realising that some will undoubtedly fail.	_____
<b>5</b>	It is basically my own responsibility to decide how my job gets done.	_____
<b>6</b>	I almost always get to decide what I do on my job.	_____
<b>7</b>	I have the freedom to decide what I do on my job.	_____
<b>8</b>	I have much autonomy on my job and am left on my own to do my own work	_____
<b>9</b>	My manager would tell his boss if my work was outstanding.	_____
<b>10</b>	My supervisor will increase my job responsibilities if I am performing well in my job.	_____
<b>11</b>	My supervisor will give me special recognition if my work performance is especially good.	_____
<b>12</b>	The rewards I receive are dependent upon my work on the job.	_____
<b>13</b>	I have just the right amount of time and workload to do everything well.	_____
<b>14</b>	I feel that I am always working with time constraints on my job.	_____
<b>15</b>	I always seem to have plenty of time to get everything done.	_____
<b>16</b>	During the past three months, my work load was too heavy to spend time on developing new ideas.	_____
<b>17</b>	I clearly know what level of work performance is expected from me in terms of amount, quality and timeliness of output.	_____
<b>18</b>	On my job I have no doubt of what is expected of me.	_____
<b>19</b>	There is little uncertainty in my job.	_____
<b>20</b>	In the past three months, I have always followed standard operating procedures or practices to do my major tasks.	_____



## Appendix L: The human resource practice (HRP) scale

The statements below describe various aspects of HRPs. For each statement decide how satisfied or dissatisfied you feel about your organisations HRPs.

Please tick the suitable box	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
<b>Training and Development</b>					
1. My company is committed to the training and development needs of its employee.	1	2	3	4	5
2. Employees are encouraged to accept education and training within the company.	1	2	3	4	5
3. This organisation has provided me with training opportunities enabling me to extend my range of skills and abilities.	1	2	3	4	5
<b>Compensation and Rewards</b>					
4. My salary and benefits have been an adequate return for the time and energy demanded of me.	1	2	3	4	5
5. I am satisfied with my company reward system to compensate good performance.	1	2	3	4	5
6. The company's compensation and reward system encourages team and individual contributions.	1	2	3	4	5
<b>Performance Management</b>					
7. My company's performance management system is fair and based on clear objectives at the beginning of the term/year.	1	2	3	4	5
8. The company has provided enough information regarding specific methods of the performance evaluation system.	1	2	3	4	5
9. Employees are allowed to formally communicate with supervisors/managers regarding the appraisal results.	1	2	3	4	5
<b>Supervisor Support</b>					
10. My supervisor would personally use his/her power to help me solve my work problems.	1	2	3	4	5
11. My supervisor always gives credit and encourages employee for a job well done.	1	2	3	4	5
12. My supervisor often lets me know how well he/she thinks I am performing the job.	1	2	3	4	5
<b>Staffing</b>					

13. Proper company procedures and processes are always followed when staffing/recruitment decisions are made.	1	2	3	4	5
14. Interview panels are used during the staffing process in this organisation.	1	2	3	4	5
15. All appointments in this organisation are based on merit (i.e., the best person for the job is selected regardless of their personal characteristics)	1	2	3	4	5
<b>Diversity Management</b>					
16. The company spends enough time and effort on diversity awareness related to race, gender and religion.	1	2	3	4	5
17. Management is supportive of cultural difference in this organisation.	1	2	3	4	5
18. People living with disabilities have the employment opportunities in this organisation.	1	2	3	4	5
<b>Communication and Information Sharing</b>					
19. My company regularly provides information sharing sessions to all employees.	1	2	3	4	5
20. Continuous improved communications between management and staff is stated as an important company objective and is being practiced.	1	2	3	4	5
21. My company's communication channels are opened and effective in dealing with matters that are relevant to employees.	1	2	3	4	5

### Appendix M: The Utrecht work engagement (WE) scale-9

Rate the following according to how often you exhibit the mentioned behaviour in your work.

<b>Never</b>	<b>Almost Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Very Often</b>	<b>Always</b>
<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Never</b>	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

	Question	Answer
<b>1</b>	At my work, I feel bursting with energy.	_____
<b>2</b>	At my job, I feel strong and vigorous.	_____
<b>3</b>	I am enthusiastic about my job.	_____
<b>4</b>	My job inspires me.	_____
<b>5</b>	When I get up in the morning, I feel like going to work.	_____
<b>6</b>	I feel happy when I am working intensely.	_____
<b>7</b>	I am proud of the work that I do.	_____
<b>8</b>	I am immersed in my work.	_____
<b>9</b>	I get carried away when I am working.	_____

### Appendix N: The affective commitment (AC) scale

Rate the following according to how often you exhibit the mentioned behaviour in your work.

<b>Strongly Disagree</b>	<b>Moderately Disagree</b>	<b>Slightly Disagree</b>	<b>Neither Agree nor Disagree</b>	<b>Slightly Agree</b>	<b>Moderately Agree</b>	<b>Strongly Agree</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>

	<b>Question</b>	<b>Answer</b>
<b>1</b>	I would be very happy to spend the rest of my career with this organisation.	_____
<b>2</b>	I enjoy discussing my organisation with people outside it.	_____
<b>3</b>	I really feel as if this organisation's problems are my own.	_____
<b>4</b>	I think that I could easily become as attached to another organisation as I am to this one.	_____
<b>5</b>	I do not feel like 'part of the family' at my organisation.	_____
<b>6</b>	I do not feel 'emotionally attached' to this organisation.	_____
<b>7</b>	This organisation has a great deal of personal meaning for me.	_____
<b>8</b>	I do not feel a strong sense of belonging to my organisation.	_____

## Appendix O: Research ethics application for research involving secondary data

### GRADUATE SCHOOL OF BUSINESS LEADERSHIP (SBL)



#### FORM 4: 2017

#### RESEARCH ETHICS APPLICATION FOR RESEARCH INVOLVING SECONDARY DATA

PLEASE STUDY THE FOLLOWING BEFORE COMPLETING THE APPLICATION

##### INFORMATION FOR APPLICANTS

1. This template [© 2017] is the official application form that must be used by employees and students of the Graduate School of Business Leadership (SBL) to apply for research ethics clearance when using secondary data.
2. Study the Unisa Policy on Research Ethics before completing this application:  
[http://staffcmsys.unisa.ac.za/cmsys/staff/contents/departments/res\\_policies/docs/Policy%20on%20Research%20Ethics%20-%20rev%20appr%20-%20Council%20-%2015.09.2016.pdf](http://staffcmsys.unisa.ac.za/cmsys/staff/contents/departments/res_policies/docs/Policy%20on%20Research%20Ethics%20-%20rev%20appr%20-%20Council%20-%2015.09.2016.pdf)
3. Study the Unisa Policy for conducting research involving Unisa employees, students or data (2016) to obtain information about acquiring permission from the Research Permissions Subcommittee of the Senate Research, Innovation, Postgraduate Degrees and Commercialisation Committee (SRIPCC) to do research that involves Unisa employees, students and/or data if applicable. Please note that permission should be obtained from the RPSC of the SRIPCC after ethical clearance has been obtained. The clearance certificate should be appended to the RPSC application.
- 5.5 **To apply for permission from the RPSC of the SRIPCC to conduct research involving Unisa Employees, Students or Data use RPSC form available at <https://staff.unisa.ac.za/secure/index.jsp>** (This application form should be submitted to Ms N Motloi, [motlonc@unisa.ac.za](mailto:motlonc@unisa.ac.za) 10 days prior to the SRIPCC meeting).
4. The Unisa policy on research ethics (2014) does not apply retrospectively. If data collection has already started or is in progress the research ethics review committee (RERC) will not consider the application.
5. **Late submissions to the SBL RERC cannot be accepted.** Late submissions will stand over to the next SBL RERC review meeting.
6. Sometimes the application can be moved to the following meeting if the matter cannot be handled at a set meeting.
7. The SBL RERC will evaluate the ethical soundness of the application. **Ethical soundness relates to scientific quality of the study.**

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8. On submission, a research ethics clearance number will be allocated to the research project. This number should be used in all communications about the project with the SBL RERC.
9. The application form and supporting documents will enter a pre-approval phase where the research ethics chairperson or secretary will review the application for technical quality and ensure that all sections are complete where after it is submitted for review according to the Unisa Standard Operating Procedure on Research Ethics Risk Assessment.
10. The applicant will be notified of the outcome of the application within two weeks after the meeting.
11. Decisions reached by the SBL RERC could be (see Annexure A of the policy section 9.8):
  - Approved
  - Referred back – requires modification, further information or clarification
  - Disapproved with reasons.
12. Expedited review is possible for Masters proposals which meet the criteria for negligible or low risk research projects (Category 1 and 2). The chairperson may assist with the expedited review or nominate three or more members to review the application based on the anticipated risk of the study.
13. If the application was referred back, respond to the committee's feedback within a month of receiving the formal feedback. A memorandum should accompany the revised application. All amendments should be clearly highlighted in the revised application form and supporting documents. The application will be removed from the SBL RERC's agenda if no feedback is received within 3 months.
14. Doctorate students to submit a scientific assessment report and proof of presenting at a colloquium.
15. The SBL RERC will issue an ethics clearance certificate for use in the final copy of the dissertation or thesis which is submitted for examination. Some journals request a certificate from a RERC as proof of obtaining ethical clearance.
16. The ethics is only valid for the period indicated and once signed by the Chairperson and the CEO of the SBL.

If you have any questions about or require assistance with the completion of this form, please contact your supervisor (master's or doctoral students).

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<b>IMPORTANT:</b>		
<b>IF YOU ANSWERED 'YES' PLEASE STOP COMPLETING THIS FORM AND REFER TO APPLICATION FORM 1.</b>		
The proposed study will involve human participants directly through	YES	NO
Interaction or intervention with living individuals		X

**NOTE:** For research that involves direct human participant involvement or a combination of direct human participant involvement and the collection of secondary information, complete Form 1.

For research that involves NO human participant involvement, complete Form 3.

<i>For applicant use</i> <i>*This section is needed for record keeping.</i>		
DATE SUBMITTED TO RERC	12 March 2018	
PREVIOUS APPLICATION NUMBER <i>(Applicant to indicate a previously allocated application number in case of a resubmission if applicable)</i>	Previous Application Number	Not applicable
		X

*\*This section is for office use only.*

APPLICATION NUMBER	
DATE PROCESSED (submitted to reviewers)	
RISK LEVEL ( <i>low, medium or high</i> )	
TYPE OF REVIEW (expedited or full committee review)	
AGENDA DATE <i>(For expedited transactions, the agenda date is the date the expedited approval gets reported or ratified at the convened ERC)</i>	
DECISION OF RERC (approved, referred back, disapproved)	
DATE OF ISSUING APPROVAL CERTIFICATE OR FEEDBACK LETTER	
Period for which approval is valid (Valid only as long as approved procedures are followed)	

### PRIVACY INFORMATION:

The information you provide on this form is collected for the primary purpose of assessing your research ethics application. This information will also be entered into a database to assist with administration, correspondence, and statistical analyses. These records are accessed by the Unisa

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## GRADUATE SCHOOL OF BUSINESS LEADERSHIP (SBL)



Research Ethics Review Ethics office bearers and members of committee. Records will be made available to authorised third parties should the need arise. All records are kept in a manner that will ensure confidentiality and secure indefinite storage after the expiry of the term of approval. Although this information is not usually disclosed to other individuals, there may be some circumstances that require the information to be disclosed.

### Contents of this application form

Item	Page no
<b>RESEARCHER'S DECLARATION</b>	3-6
Section 1 – Researcher(s) details	7
Section 2 – Details of proposed research	8-9
Section 3 – Details of The Data	10-12
Section 4 – Ethical considerations	12-13
Section 5 – Risk Assessment	13-14



## GRADUATE SCHOOL OF BUSINESS LEADERSHIP (SBL)



### RESEARCHER'S DECLARATION TO ADHERE TO THE UNISA CODE OF CONDUCT REGARDING THE ETHICS OF THE PROPOSED RESEARCH

By signing below, I Navin Gazanchand Matookchund (full name of the main researcher) I declare as follows:

a) I completed all the sections of this form that are relevant to the proposed research study.	<input checked="" type="checkbox"/>	Agree
b) I have acquainted myself with UNISA's code on research ethics expressed in the UNISA Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment. I shall fully comply with it.	<input checked="" type="checkbox"/>	Agree
c) I shall conduct the research in strict accordance with the approved proposal. I acknowledge that the approval is valid as long as approved procedures are followed.	<input checked="" type="checkbox"/>	Agree
d) I shall notify the URERC in writing if any changes to the research are proposed that may affect any of the study-related risks for the research.	<input checked="" type="checkbox"/>	Agree
e) I shall maintain privacy and the confidentiality of records pertaining to the research.	<input checked="" type="checkbox"/>	Agree
f) I shall not use the research and information in a manner that is detrimental to individuals or institutions unless it can be scientifically justified.	<input checked="" type="checkbox"/>	Agree
g) I shall store research data securely and in accordance with the data management measures indicated in my application/proposal.	<input checked="" type="checkbox"/>	Agree
h) I shall uphold research integrity and refrain from conduct that may taint the integrity of science, including, but not limited to plagiarism, fabrication and falsification of data.	<input checked="" type="checkbox"/>	Agree
i) I shall refrain from the use of human participant data that was collected without a valid research ethics approval for the purpose of this research (retrospective use of participant data).	<input checked="" type="checkbox"/>	Agree
j) I shall take the necessary steps to warrant that co-researchers, <u>if applicable</u> , familiarise themselves with the Unisa Policy on Research Ethics.	<input type="checkbox"/>	N/A
	<input checked="" type="checkbox"/>	Agree

## GRADUATE SCHOOL OF BUSINESS LEADERSHIP (SBL)



To my knowledge I have addressed all aspects in my application for research ethics approval set forth in the University of South Africa's Policy for Research Ethics. I confirm that the form is complete. I will ensure that I notify the committee in writing if any changes to the research are proposed that may affect the methodology and any of the study-related risks for the research participants.

### Signing of declaration

	Name in Print	Signature	Date signed
Applicant:	Navin Gazanchand Matookchund		12:03:2018

### Approved by supervisor

To my knowledge the student has addressed all aspects in his/her application for research ethics approval set forth in the University of South Africa's Policy for Research Ethics. I confirm that the form is complete. I will ensure that the student notify the committee in writing if any changes to the research are proposed that may affect any of the study-related risks for the research participants. Subsequently, I approve the submission and recommend that approval is granted for the research.

	Name in Print	Signature	Date signed
	Prof. Renier Steyn	<i>Renier Steyn</i>	12:03:2018

## GRADUATE SCHOOL OF BUSINESS LEADERSHIP (SBL)



### SECTION 1: RESEARCHER'S DETAILS

*\*This section should be fully completed to aid with the issuing of the clearance certificate and for sound administrative procedures\**

<b>1.1</b>	<b>Details of main researcher (referred to as the applicant).</b>				
Title	Full Name & Surname	Staff / student no	Department/ Unit	Contact number	Email
Mr	Navin Gazanchand Matookchund	77440943	SBL	Mobile: 082 800 5204 Work: 016 920 4716	<a href="mailto:navin.matookchund@sasol.com">navin.matookchund@sasol.com</a> <a href="mailto:navin007m@gmail.com">navin007m@gmail.com</a>
Abridged CV of main researcher		<b>1.1 a)</b> Please insert an abridged CV with the following information: <ul style="list-style-type: none"> <li>- Experience relevant to the proposed research: Managerial experience in the field of people management.</li> <li>- Qualifications relevant to the proposed research: Master of Business Leadership (UNISA)</li> <li>- Publications and other research outputs: Conducted research for MBL dissertation (quantitative research design)</li> </ul>			

<b>1.2</b>	<b>Supervisor* if the application is made by a student.</b>				
Title	Full Name & Surname	Staff / student no	Department/Unit	Contact numbers	Email
Prof	Renier Steyn	90153413	SBL	Mobile: 079 227 3984 Work: 011 652 0254	<a href="mailto:steynr@unisa.ac.za">steynr@unisa.ac.za</a>
Abridged CV of supervisor		<b>1.3 a)</b> Please insert an abridged CV with the following information: <ul style="list-style-type: none"> <li>- Experience relevant to the proposed research: Managerial experience in the field of people management and supervision of similar projects</li> <li>- Qualifications relevant to the proposed research: PhD, DLitt et Phi, PhD (Business Administration)</li> <li>- Publications and other research outputs: 4 PhD's and 100 MBL's supervised to completion; 50 Research outputs</li> </ul>			



**SECTION 2 – DETAILS OF PROPOSED RESEARCH**

<b>2.1</b>	<b>Type of application (more than one option may apply)</b> <i>Place x in box [if other, provide details in the space allowed for comments]</i>		
Postgraduate student research	X	Collaborative research	
Staff application for non-degree purpose (journal articles; conference presentations etc.)		Community Engaged Research	
Research and Development (R&D) Leave		Other	
Justify why you deem this a CE research project OR collaborative research project:  N/A			
Please indicate the qualification for which ethical clearance is requested for postgraduate student research:  Doctor of Business Leadership (DBL)			

<b>2.2</b>	<b>Title of the Research Project</b>
Human resource practices, particularly performance appraisal, and innovation.	

<b>2.3</b>	<b>Provide a proposal summary in approximately 500 words. [This requirement should be met by all applicants]</b>
See attached – Annexure B: Research Proposal	
<p><b>Research problem</b></p> <p>Organisations invest many hours in performance appraisal (PA), and given the popularity of such practices, it must be assumed that PAs contribute to success. From a business perspective, empirical research on the PA-innovation link is lacking. This is a pressing problem from an academic point of view and from a practitioner’s perspective, given the amount of time spent on PAs and the importance of identifying antecedents which drive innovation.</p> <p>There are numerous papers on PA and innovation but none explicitly studied the PA-innovation link from a quantitative perspective. Conclusive evidence of the importance of PA is not available, nor which elements of PAs are important in relation to innovation. This indicates a gap in the literature.</p> <p><b>Aim</b></p> <p>To investigate how and to what degree PA influences innovation. The objectives are:</p> <ol style="list-style-type: none"> <li>1 Critically review and synthesise the present body of knowledge pertaining to the PA and innovation link.</li> <li>2 Report on the magnitude of the effect of PA on innovation, from reviewing the literature.</li> </ol>	

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- 3 Report on the relative magnitude of the effect of PA, given other HRPs, on innovation, from reviewing the literature.
- 4 Empirically investigate and present evidence on the link between PA and innovation (and its relative influence, given non-human resource antecedents), both across employees (in general) and within (specific) organisations.
- 5 Empirically investigate and present evidence on the link between PA and innovation (and its relative influence, given other human resource antecedents), both across employees (in general) and within (specific) organisations.
- 6 Empirically investigate and present evidence on the link between PA and innovation, given moderation and mediation variables.

### Anticipated outcomes

Critically reviewing and synthesising the present literature (objective one), provides a foundation for this study. There is a gap in the literature which the researcher will close. This information is important to the researcher and the academic community as it indicates the contribution that can be made to the literature.

The researcher will synthesize literature and investigate the magnitude of the PA-innovation relationship (objectives two and four) which HR practitioners claim exist. The researcher shall identify and quantify PA elements which enhance innovation. Achieving these objectives will validate the PA-innovation link and the magnitude of the link, thus contributing to the literature. This provides managers and practitioners with valuable information regarding the PA-innovation link and identifies which PA elements enhance innovation, which will allow practitioners to enrich their PA processes thereby enhancing innovation.

The researcher will synthesize literature and investigate the relative magnitude of the effect of PA, given other HR practices, on innovation (objectives three and five). The researcher will define the relative role of PAs in the bouquet of HR practices. Achieving these objectives will provide managers with valuable information with regards to PA and the other HR practices and add to the literature. The researcher will also identify which HR practices influence innovation and to what degree.

The researcher will investigate and report the effect of PA, given mediators and moderators, on innovation (objective six). This will provide valuable information to managers and practitioners.

The outcomes would benefit business stakeholders. It is anticipated that the research shall lead to an increase in knowledge and discovery which is important to society, academics and many others. Furthermore, it is anticipated that the observations during this study can assist all organisations to better understand the PA-innovation relationship, and assist in implementing effective PA systems. The main outcome is achieving organisational success.

### Research design

The study consists of a systematic literature review (objectives one, two and three) and a cross-sectional survey design was used for empirical studies (objectives four, five and six) which focused on quantitative data.

2.4	Append the letter of proposal acceptance to this application if applicable	
	See attached – Annexure C: Letter of Proposal Acceptance	
	YES	X
	NO	
	Not applicable	



**SECTION 3 – DETAILS OF THE DATA**

3.1.	<b>Identify the nature of the data (Archival sources, statistical data, reports, prior collected research data)</b>				
<p>The study shall make use of secondary data only. The data was collected as part of a larger research project, led by Professor Renier Steyn. The data was collected in accordance with the ethics guidelines of UNISA, and permission was obtained from the Ethics Review Committee for the original data gathering phase and use of the data. The approval number is: 2014_SBL_018_CA. The dataset includes 3 180 employees from 53 companies within South Africa. This data was collected from human participants using structured standardised questionnaires.</p> <p><b>See attached – Annexure D: Ethics Approval Certificate</b></p>					
3.2	<b>What is the origin/source of the research data? For what purpose was the data originally collected? <i>This assists an ethical reviewer in determining whether the sources can raise ethical concerns.</i></b>				
<p>The data was collected as part of a larger research project, led by Professor Renier Steyn. The data was collected for the purposes of conducting academic research. Originally it was used in the mini-dissertations of MBL students. Now, the data will be integrated in a more complex project – namely in this DBL study. The use of the data for larger projects was specified in the original application.</p>					
3.3	<p><b>Are the sources of the research data in the public domain?</b>  <i>Some public sources are obvious, e.g. the internet, World Bank, IMF, stock exchanges, national statistical offices databases, etc. However, for those which are not well-known the researcher must provide evidence.</i></p> <table border="1" style="margin-left: 20px;"> <tr> <td style="padding: 2px;">YES</td> <td style="width: 30px; height: 15px;"></td> </tr> <tr> <td style="padding: 2px;">NO</td> <td style="text-align: center; padding: 2px;">X</td> </tr> </table> <p><b>Provide evidence if applicable (i.e. link to website)</b></p> <p>N/A</p>	YES		NO	X
YES					
NO	X				
3.4	<p><b>If the data are not in the public domain, what are the conditions for access?</b>  <i>Access to data could be restricted, e.g. sharing of data with other researchers, where permission should be obtained. Some data could be purchased or subscribed to by paying a fee.</i></p>				
<p><b>Details of obtaining data:</b></p> <p>Prof. Renier Steyn is the custodian of the data. He has given me access to the collected data.</p> <p><b>See attached – Annexure E: Permission to use data</b></p>					

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3.5	<p>Does the database or secondary data set contain any personal information/identifiers? [This information relates to the anonymity of data/ confidentiality of the data]  <i>Databases such as credit bureaux, utility companies' databases, etc. contain personal information which might be an ethical concern.</i></p> <table border="1"> <tr> <td>YES</td> <td></td> </tr> <tr> <td>NO</td> <td>X</td> </tr> </table>	YES		NO	X		
YES							
NO	X						
3.6	<p>If the database or secondary data set does contain personal information, do you have evidence that the data to be provided to you have been anonymised?  <i>This question is critical in determining as to whether elaborate ethical clearance procedures are warranted.</i></p> <table border="1"> <tr> <td>YES</td> <td>X</td> </tr> <tr> <td>NO</td> <td></td> </tr> <tr> <td>Not applicable</td> <td></td> </tr> </table>	YES	X	NO		Not applicable	
YES	X						
NO							
Not applicable							
<p><b>Comment / justification:</b>                  The data contains information on individual perceptions – and no personal identifiers are attached to the data. The sample size is relatively large, and as such several respondents may have similar profiles. However, no reporting will be done on individuals – only aggregated data will be reported. In sum, no individuals will (or can be) be identified.</p>							
3.7	<p>In the case of a private database or data set, does it contain information on private firms/organisations for which permission is required?  <i>Generally, public and listed firms' information is in the public domain. Private firms normally want to keep their data confidential, the very reason they chose to remain private. Hence, it would be unethical to use their data without permission.</i></p>						
<p><b>Please provide evidence of permission:</b>                  The data contains information on individuals working in organisations – but no identifiers are attached to the data. The sample size is also relatively large, and as such organisations may have similar profiles. However, no reporting will be done on organisations – only aggregated data will be reported. In sum, no organisations will (or can) be identified.</p>							
3.8	<p>Will the shortcomings/incompleteness of the data be reported?</p> <table border="1"> <tr> <td>YES</td> <td>X</td> </tr> <tr> <td>NO</td> <td></td> </tr> </table>	YES	X	NO			
YES	X						
NO							
3.9	<p>How are the limitations of the data going to be reported?</p>						

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The limitations of the data will be reported in the thesis – in a section dedicated to that – called the limitations. Some of the limitations include (a) the presentation of the questionnaires in English only, (b) the exclusive use of respondent’s perceptions and (c) the length of the questionnaires which might have caused some respondents to arbitrarily select answers rather than considering each question/statement carefully.

3.10 **Are the research methodology and the research design in line with the answers of the preceding questions?**  
*Researchers may articulate that they will use secondary data analysis but a closer look to their research proposals will point to mixed methods where collection of data involving humans is partly envisaged.*

No additional data will be collected – all research questions can be answered by using the data.  
 The research methodology was approved by Professor Renier Steyn and will be presented at a DBL Colloquium at UNISA SBL during May 2018.

3.11 **How are the original owners of the data going to be recognised/referenced/acknowledged/cited?**

The MBL students, as collectors of the data, as well as Professor Renier Steyn, the custodian of the data, will be acknowledged in the thesis and all publications.

**SECTION 4: ETHICAL CONSIDERATIONS**

4.1 **Was ethical clearance granted for the original data gathering phase by this/other research ethics committee?**  
*This question is critical in determining as to whether the original data were gathered in an ethical manner.*

YES	X
NO	
UNKNOWN	
NOT APPLICABLE	

**Comment / justification:**

The data was collected as part of a larger research project, led by Professor Renier Steyn. The data was collected in accordance with the ethics guidelines of UNISA, and permission was obtained from the Ethics



## GRADUATE SCHOOL OF BUSINESS LEADERSHIP (SBL)



Review Committee for the original data gathering phase and use of the data. The dataset includes 3 180 employees from 53 companies within South Africa. The approval number is: 2014\_SBL\_018\_CA.

See attached – Annexure D: Ethics Approval Certificate

4.2 Did the participants in the original study grant permission for future use of the data?

YES	X
NO	
UNKNOWN	
NOT APPLICABLE	

Comment / justification:

The research information sheet stipulates that the data will be also be used for research purposes, writing research reports, including journal articles, conference proceedings, and dissertations.

4.3 Please provide details of the safekeeping, de-identification and preservation of data, including the duration of preservation. If the data will not be preserved, indicate how it will be destroyed and after how long.

Comment / justification:

The data will be stored by the applicant's supervisor (Professor Renier Steyn) on a password protected computer and may be retained for a period of five years.

### SECTION 5 – RISK ASSESSMENT

5.1 The study presents:

5.,1.1 Negligible risk	X
5.1.2 Low risk	
5.1.3 Medium risk	
5.1.4 High risk	

5.2 Briefly justify your choice/classification

Approval for the collection of the original data by the MBL students has already been approved by the Ethics Review Committee (approval number: 2014\_SBL\_018\_CA), meeting all the requirements for the protection

SBL FORM 4 Secondary Data Usage-Adapted from 2017\_URERC FORM 2 approved Jan 2017

## GRADUATE SCHOOL OF BUSINESS LEADERSHIP (SBL)



of human subjects. Also, the organisations in which the original data is collected will not be named (the data has been cleaned of all identifiers). Summarising, the original data does not include any personal or other identification details of the respective respondents or that of the participating organisations. The results of this research will be reported in a responsible manner, under the supervision of Professor Steyn as well as the SBL Colloquium.

5.1 In medium and high risk research, indicate the potential benefits of the study for the research participants and/or other entities.

N/A

5.2 In medium and high risk research, indicate how the potential risks of harm will be mitigated by explaining the steps that will be taken to minimise the likelihood of the event occurring (e.g. referral for counselling, debriefing, etc.).

N/A

### SECTION 6 – CHECKLIST

Checklist of Documents		YES	NO
<i>Not applicable</i> <input type="checkbox"/>		<i>Place an 'x' in the box provided</i>	
a) Proof of registration – Annexure A	<input checked="" type="checkbox"/>	X	
b) Research proposal – Annexure B	<input checked="" type="checkbox"/>	X	
c) Letter of proposal acceptance – Annexure C	<input checked="" type="checkbox"/>	X	
d) Ethics approval certificate – Annexure D	<input checked="" type="checkbox"/>	X	
e) Permission to use data – Annexure E	<input checked="" type="checkbox"/>	X	



## Appendix P: Ethical clearance

Graduate School of Business Leadership, University of South Africa, PO Box 392, Unisa, 0003, South Africa  
Cnr Janadri and Alexandra Avenues, Midrand, 1685. Tel: +27 11 652 0000, Fax: +27 11 652 0299  
E-mail: [sbl@unisa.ac.za](mailto:sbl@unisa.ac.za) Website: [www.unisa.ac.za/sbl](http://www.unisa.ac.za/sbl)

### SCHOOL OF BUSINESS LEADERSHIP RESEARCH ETHICS REVIEW COMMITTEE (GSBL CRERC)

24 April 2018

Ref #: 2018\_SBL\_DBL\_003\_SD  
Name of applicant: Mr NG  
Matookchund  
Student #: 77440943

Dear Mr Matookchund

**Decision: Ethics Approval**

**Student:** Mr NG Matookchund, [navin.matookchund@sasol.com](mailto:navin.matookchund@sasol.com), 082 800 5204

**Supervisor:** Prof R Steyn, [steynr@unisa.ac.za](mailto:steynr@unisa.ac.za), 011 652 0254

**Project Title:** Human resource practices, particularly performance appraisal, and innovation

**Qualification:** Doctorate in Business Leadership (DBL)

**Expiry Date:** March 2022

Thank you for applying for research ethics clearance, SBL Research Ethics Review Committee reviewed your application in compliance with the Unisa Policy on Research Ethics.

**Outcome of the SBL Research Committee:**

**Approval is granted for the duration of the Project**

The application was reviewed in compliance with the Unisa Policy on Research Ethics by the SBL Research Ethics Review Committee on the 19/04/2018.

The proposed research may now commence with the proviso that:

- 1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
- 2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should

45 Building leaders who go beyond

SBL  
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BUSINESS LEADERSHIP  
UNISA

be communicated in writing to the SBL Research Ethics Review Committee.

- 3) An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.
- 4) The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.

Kind regards,

  
Prof R. Ramphal

**Chairperson: SBL Research Ethics Committee**

011 - 652 0363 or [ramphrr@unisa.ac.za](mailto:ramphrr@unisa.ac.za)

  
Prof RT Mpofu

**Executive Dean (Acting): Graduate School of Business Leadership**

011- 652 0256/[mpofurt@unisa.ac.za](mailto:mpofurt@unisa.ac.za)

**Appendix Q: Certificate from language expert**

**Language Editing**

PO Box 1439  
Wingate Park  
0153

31 January 2019

**Editing of thesis: Mr Navin Gazanchand Matookchund**

This letter serves to confirm that I have performed the English language editing on the thesis to be submitted by Mr Navin Gazanchand Matookchund to the Unisa Graduate School of Business Leadership in accordance with the requirements for the degree of Doctor of Business Leadership and entitled:

*Performance Appraisal as Driver of Individual Innovation  
within and across Organisations*

While I am a permanent employee of the Directorate: Language Services at the University of South Africa in Pretoria – where I serve as an editor and translator – the editing of Mr Matookchund's thesis has been undertaken in my personal capacity.

Yours faithfully



**CE Baudin**

## Appendix R: Student's permission to submit thesis for examination

Dear Student

With reference to previous correspondence, I have pleasure in informing you that your supervisor has consented to your submitting the thesis for examination with the following title:

### **PERFORMANCE APPRAISAL AS DRIVER OF INDIVIDUAL INNOVATION WITHIN AND ACROSS ORGANISATIONS**

For purposes of examination, **four copies**, bound between soft covers with a glued spine or ringbound, of the thesis must be submitted, **as well as an electronic PDF version (CD, DVD or memory stick)**. The copies must be addressed to The Registrar, for attention **RMD, M & D section, Preller Street, Unisa, Pretoria, 0003** [Tel (012)429-3057, (012)429-3506, (012)429-3150 or (012)429-3486], or they may be handed in personally at the counter, Level 2 in Block B, Theo van Wijk Building (use the Gold Fields entrance)\*. **Please note that if you are not registered for the academic year 2018, you will have to re-register before you can submit.**

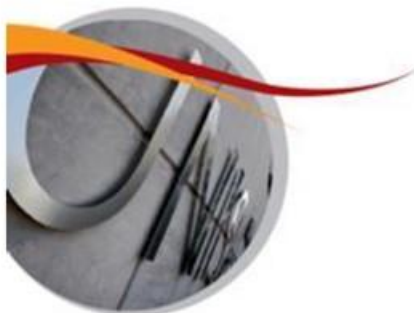
#### **Regarding submission dates the following rules apply:**

- If submission takes place after 15 June a student will only graduate in Autumn of the following year;
- if submission takes place after 15 November graduation will only take place in Spring of the following year;
- if submission takes place after 31 January a student will graduate in Spring and have to reregister and pay the full tuition fees;
- if you are not currently a registered student, submission will not be allowed.

Please note that, **after the examination has been completed** and **after** any corrections that the examiners might request have been effected, a student must, before the degree can be awarded, submit the text in **electronic format** to his/her supervisor for the purpose of uploading to the Unisa Institutional Repository.

Thank you

Kind Regards



**UNISA** |   
university  
of south africa

Mr Ntweng Sidney Modingwane  
Advisor: M & D Exam Coordination  
College of Graduate Studies  
Es'kia Mphahlele Building, Block A, 1st level  
Sunnyside Campus  
Tel: 012 444 8646  
E-mail: [modinns@unisa.ac.za](mailto:modinns@unisa.ac.za)



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for The Executive Dean: College of Graduate Studies

Appendix S: Turn-It-In originality report including primary sources

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