

# Performance Appraisal as an Antecedent to Innovation: an Analysis of Its Relative Importance

Navin Gazanchand Matookchund (Corresponding author)

Graduate School of Business Leadership, University of South Africa,

PO Box 396, 0003 Pretoria, South Africa

E-mail: [navin.matookchund@sasol.com](mailto:navin.matookchund@sasol.com)

Renier Steyn

Graduate School of Business Leadership, University of South Africa,

PO Box 396, 0003 Pretoria, South Africa

E-mail: [steynr@unisa.ac.za](mailto:steynr@unisa.ac.za)

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## Abstract

Literature suggests that performance appraisal (PA) contributes to innovation. However, the absolute and relative importance of PA to innovation, the different aspects of PA which drive innovation, as well as PA as a precursor among other antecedents to innovation, has not been adequately described. The aim of the study is to provide clarity on the drivers of innovation, specifically contextualising the impact of PA within the South African context. This study used a cross-sectional survey design, where only quantitative data was collected from full-time employees across private sector, parastatal, and government organisations. 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 5.7% of the variance in innovation. Items in the PA scale with a clear link to innovation were identified, and thematically integrated. It was further found that, when PA was combined with other antecedents of innovation, leading to 26.6% of the variance in innovation being explained, the role of PA was significant, though mostly secondary. Proactive personality was the most dominant predictor of innovation. 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 a source of competitive advantage.

There are many antecedents to innovation. These include leadership (Paulsen, Callan, Ayoko, & Saunders, 2013; Tipu, Ryan, & Fantazy, 2012), organisational climate (Michaelis, Stegmaier, & Sonntag, 2010; Shanker, Bhunugopan, & Fish, 2012), organisational culture (Michaelis et al., 2010; Tipu et al., 2012), organisational design (Michaelis et al., 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), and generic human resource practices (HRPs) (Aktharsha, & Sengottuvel, 2016; Dalota, & Perju, 2010; 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 specific void.

Although some studies (e.g., Bal, Bozkurt, & Ertemsir, 2014; Jimenez-Jimenez, & Sanz-Valle, 2005; Mark, & Akhtar, 2003; Shipton et al., 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 organisational variables. Published 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 the development and administration of PA systems (Grote, 1996; Khoury, & Analoui, 2004).

### *1.1 Research Problem*

Literature suggests that PA contributes to innovation. However, appropriate knowledge with regard to the relative importance of PA, the various aspects of PA which are linked to innovation, and PA as a precursor among other antecedents to innovation, is not adequately described. The absence of nuanced information pertaining to the PA-innovation relationship may result in the inappropriate allocation of resources to PA which, in turn, may impede the organisation's success. Furthermore, this link has not been well investigated in South Africa, where organisational and cultural 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 the aspects of PA, PA as a single concept, and the relative importance of PA as a driver of innovation compared to other antecedents of innovation.

## **2. Literature Review**

DeNisi and Pritchard (2006), and Esu and Inyang (2009) 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).

PA's 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; Nankervis, & Compton, 2006), therefore human resource researchers and practitioners alike have devoted close to a century to PA research (DeNisi, & Pritchard, 2006; Siaguru, 2011).

PA's 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; Grobler, Wänich, Carrell, Elbert, & Hatfield, 2011). PA systems should incorporate all

those facets of human resource management that advance the effectiveness and efficiency of both the organisation and the employee (Khoury, & Analoui, 2004). Khan (2013) thus states 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 et al. (2011) likewise 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 et al. (2014), Jimenez-Jimenez and Sanz-Valle (2005) and Shipton et al. (2006) establish that there is a strong and positive link between PA and innovation. Specifically, Shipton et al. (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 Nasuridin (2011), for example, suggest that workers achieve better results in innovative undertakings as effective PAs increase worker satisfaction and commitment. In the study by Ling and Nasuridin (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, & Nasuridin, 2011). In the study conducted by Runfeng (2011), the author found that organisational innovative climate mediate the PA-innovative behaviours relationship. This supports the notion that PAs have indirect effects on innovation.

PA is however not the only antecedent to innovation. It is apparent from the literature that transformational leadership (TL), organisational climate and proactive personality (PP) are significant predictors of innovation. In studying the leadership literature on innovation, Sethibe and Steyn (2015) report that researchers focused almost exclusively on TL when studying the relationship between leadership and innovation. TL is positively and significantly related to innovation according to Paulsen, et al. (2013), Sethibe and Steyn (2016), and Tipu et al. (2012). Another important antecedent to innovation is organisational climate (Michaelis et al., 2010; Panuwatwanich, Stewart, & Mohamed, 2008; Shanker et al., 2012). According to these authors Michaelis et al. (2010), Shanker et al. (2012), and Zhang and Begley (2011), there is a significant relationship between climate and innovation. Another important precursor to innovation is PP, which significantly and positively relates to innovative behaviour (Seibert et al., 2001; Tai, & Mai, 2016). Parker, Williams and Turner (2006), Seibert et al. (2001), and Thomas, Whitman, and Viswesvaran (2010), posit that PP is the main determinant of innovative behaviours.

It becomes clear from the literature that TL, organisational climate and PP are significant predictors of innovation. It would be important to study the relative importance of PA, given these other antecedents to innovation, to specify the role it plays in promoting innovation at work.

### 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.

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 from 53 organisations. 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.

#### *3.2 Measuring Instruments*

The five instruments utilised for this study were the Quality of a Performance Appraisal System Questionnaire (PA; Steyn, 2010), the Innovative Work Behaviour Questionnaire (IWB; De Jong, & Den Hartog, 2010), the Proactive Personality Scale (PP; Bateman, & Crant, 1993), a part of the Leadership scale, specifically the Transformational Leadership scale portion (TL; Wolins, 2012), and the Brief Corporate Entrepreneurship Assessment Instrument (CE; Strydom, 2013).

- The PA 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, Wänich, Carrell, Elbert, & Hatfield, 2006; Swanepoel et al., 2008) which describes the characteristics of an effective PA system. Grobler et al. (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 IWB questionnaire from De Jong and Den Hartog (2010) was selected as it measures the dependent variable, innovative behaviour. 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 employees’ 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 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 of 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 specified criterion variables, which is indicative of criterion validity, while discriminant validity was exposed when linking PP with intelligence, neuroticism, agreeableness, openness, private self-consciousness, and locus of control.
- Part of the leadership style questionnaire developed by Avolio, Bass, and Jung (1999) was used to assess transformational leadership (TL), and it consists of 12 items (Wolins, 2012). 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. Respondents were requested to indicate their views of 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 would be 0 and the maximum 48. Strydom (2013) reports a Cronbach alpha of 0.87, whilst 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 questionnaire is both reliable and valid.
- The CE 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 of

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. CE 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 were used to determine the magnitude of the relationship between the variables and correlations were deemed statistically significant if at the 0.01 level. Cohen's (1988) guidelines for the social sciences to evaluate 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 IWB, secondly to identify which items of PA significantly and uniquely predict IWB and, lastly, to indicate how PA and the control variables PP, CE and TL can be regressed to predict the dependent variable, 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 variable was calculated by multiplying the  $R^2$  value by 100. This is also known as the coefficient of determination.

## 4. Results

### 4.1 Biographical Data

Complete data was available for 3 180 employees from 53 organisations. Their composition is described below.

**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, whilst 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, Black people make up the largest workforce group, followed by White people, Coloured people, and Asian people in descending order (Statistics South Africa, 2016). A total of 263 (8.3%) respondents in this study marked Asian people, 1 830 (57.5%) Black people, 263 (8.3%) Coloured people, and 787 (24.7%) White people, 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 40 (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.

**Economic sectors:** The companies in this study were categorised into three sectors already alluded to. A total of 1 981 (62.3%) respondents 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 this 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	3.101	1.341	N/A

PA items / Scale	Item content	Mean	Std. Dev.	$\alpha$
	manager and the subordinate.			
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
IWB	Innovative Work Behaviour	52.988	13.173	0.893

PA items / Scale	Item content	Mean	Std. Dev.	$\alpha$
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 PA16 showing the lowest mean (mean=2.946; standard deviation=1.352) and PA18 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 also calculated for the IWB questionnaire (0.893), the 17-item PP scale (0.843), the 20-item CE instrument (0.762) and lastly for the 12-item TL scale (0.946). All five scales have a Cronbach alpha above 0.6, which means that the reliability of all scales is acceptable.

#### 4.4 Correlation and Regression Analysis

Table 2 presents the results pertaining to the relationship between PA and 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
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, it can be reported that R=0.239 for IWB. The correlation coefficient was statistically significant. When considering the practical significance, R for IWB is ‘small’. Considering the coefficient of determination, 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  $R^2_{\text{adjusted}}=0.106$  for IWB, depicting the relationship between all items of PA and innovation. The correlation coefficient was statistically significant. When considering the practical significance,  $R^2_{\text{adjusted}}$  for IWB is ‘small’. Using all the items of the PA questionnaire allowed for 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 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 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 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 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 16: My input is taken into consideration for the improvements of the PA system for the next cycle.
- Item 17: Continuous assessment of my performance is being done regularly and recorded.

From the above, it is clear that eight out of the 18 items are predictors of innovation. Central to IWB seems to be managers who negotiate specific, measurable and stretching performance targets with each of their team members.

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, 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, PA, CE, and TL (listed in descending order of influence on innovation) have a substantial influence on IWB. In the case of IWB, PA was the second most important predictor. Importantly to note was that all the independent variables were included in the model presented, suggesting that they are all 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 investigate the phenomena 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 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 involved 3 180 employees from 53 companies, thus addressing the mentioned concern.

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 TL, PP, and CE in the model.

The results showed that the relationship between PA (as a total score) and individual innovation, although statistically significant, was practically insignificant (5.7% of the variance declared). The relationship between all items of PA and innovation was also statistically significant and practically insignificant (10.6% of the variance declared). The relationship when using all items, however, was larger than when using the total score. This may suggest that the certain individual items are better predictors of innovation.

Focusing on the individual PA items, the results showed that some were more effective in predicting innovation than others. For these items, it may be deduced that these elements of PA are the primary drivers of innovation. These can collectively be described as a PA system depicted by negotiated, specific, measurable and stretching performance targets.

It is clear from the findings that considering PA as an 'independent' 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 et al. (2013), Dalota and Perju (2010) and Runfeng (2011). Practically significant PA-innovation relationships were not found here, but may be found in individual organisations, rather than across organisations as it was tested in this research.

The variables, PP, PA, CE, and TL (listed in descending order of influence on innovation) influence IWB. In the case of IWB, PA was the second most important predictor. It can be seen that PA, among other variables, is responsible for innovation. This conclusion is aligned

with the findings of Bal et al. (2014), Jimenez-Jimenez and Sanz-Valle (2005), Mark and Akhtar (2003) and Shipton et al. (2006). The results also demonstrate that PA is a far more important driver of innovation than, for example, TL. PP has the most significant influence on 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. The research specified the importance of PA in general, as well as the relative importance of PA as an antecedent to innovation in the workplace. Specifically, the research demonstrates that PA is a significant but small driver of innovation, which accounts for about 10% of the variance in innovation. It has also been established that there are other variables that have a far more significant influence on innovation than PA, specifically PP. This research has thus led to an increase in knowledge and new discoveries on the PA-innovation link.

## **7. 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 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). Therefore, longitudinal or experimental studies are 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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The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

### *Author contributions*

N.G.M. was the main author of the article. R.S. was the supervisor of N.G.M and the co-author of the article.

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