Pathways to workplace innovation and career satisfaction in the public service: The role of leadership and culture

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Abstract

Purpose – The aim of this paper is to study the influence of two climate for innovation constructs, namely leadership and organisational culture, on workplace innovation and career satisfaction.

Design/methodology/approach – This study employed structural equation modelling to test the data from 3,125 engineering professionals in the Australian Public Service (APS).

Findings – The structural model indicated that leadership for innovation and ambidextrous culture for innovation influenced workplace innovation which, in turn, improved career satisfaction. Moreover, modelling revealed a significant relationship between ambidextrous culture for innovation and career satisfaction. This study also investigated mediation effects, and revealed both simple and sequential mediation paths in the model. It was found that improving workplace innovation and career satisfaction through recognition of an engineer's contribution to their agency would assist in retaining and advancing in-house engineering expertise.

Practical implications – The structural model could be used to address current shortages of engineering professionals in the Commonwealth of Australia departments. The findings emphasise the importance of Commonwealth departments providing opportunities for their engineers to engage in creative and innovative projects which enhance their professional career.

Originality/value – This study fills the gap in the innovation literature by exploring the relationships through which socio-psychological factors affect workplace innovation and career satisfaction on the innovation process for engineering professionals in the APS.

Keywords Leadership, Innovation, Career satisfaction, Public sector, Engineer, Structural equation modelling, Australia

Paper type Research paper

Introduction

Innovation is essential for improving efficiency and effectiveness in the public sector and to find solutions to the increasing demands of society for better services. Public agencies have become significant players in the adoption, invention and implementation of innovations (Borins, 2006). In the public sector context, innovation is defined as a learning process in which governments attempt to meet specific societal challenges, which can be solved by developing new services, technologies, organisational structures, management approaches, governance processes and policy concepts (Bekkers et al., 2011). An awareness of the importance of public sector innovation has led many researchers to study the relationship between organisational attributes and an organisation's propensity to innovate (e.g. Damanpour and Schneider, 2009, Fernandez and Pitts, 2011, Kim and Yoon, 2015). This study examines these relationships to provide an increased understanding of innovation in the public sector.

It is important that the public sector appreciates that optimal performance requires both top-down and bottom-up innovation. Top-down approaches emphasise the leading role of top management who champion their new ideas and support innovation, which is seen when elected officials and senior managers conceive and initiate many innovations (Altshuler and Behn, 2010). However, a bottom-up approach is also a source of many innovative projects because frequent innovators in public sectors are civil servants at the middle manager and frontline levels in direct contact with clients, rather than senior managers. These frontline employees ingest ideas from outside the organisation or generate novel ideas developed through experimentation, accidental occurrences, and other forms of experience (Borins, 2006).

Baer et al. (2015) assert that the study of innovation in organisations should also address the joint or combined effects of individual and organisational factors. Analysis at the individual level is particularly important, since the motivational context of the public sector differs from the private sector. Due to the absence of the traditional rewards available in the private sector, leaders should understand the factors which motivate public servants to increase their effort and performance, which can then lead to increased career satisfaction. Research at the organisational level is also significant because innovation activities mostly occur at this level. The organisational level of analysis examines the interaction of effects from multiple levels, which can explain how characteristics of the organisation affect the creativity and innovation of individual

employees and work groups who contribute to overall organisational innovation (Baregheh et al., 2009). Therefore, this study examines the combined effects of factors at the individual and the organisational level on workplace innovation in public sectors.

Innovation has also been viewed as hinging upon a socio-psychological process, because it is the product of social relationships and complex systems of interactions (Panuwatwanich et al., 2009b, Sarros et al., 2008). However, research investigating innovation has mainly been derived from private sector contexts. It is important to understand how socio-psychological processes provide practical ways to manage innovation within the complex social systems that exist in public sectors. Within public sector contexts, there are still gaps in the literature on the influence of socio-psychological factors on workplace innovation and career satisfaction. Related to this is the need to provide empirical evidence regarding the key factors that impact workplace innovation and successful workplace innovation practices which can lead to increased career satisfaction.

Innovation significantly contributes to improving conditions for both industry, and society as a whole, and the engineering profession is considered a key driver of innovation (Ulijn and Fayolle, 2004, Williamson et al., 2013). This is because engineers play a vital role in the creation, development, and generation of new technical knowledge (Menzel et al., 2007). In many circumstances, engineers work under rigid rules where progress is controlled by strict schedules and conformity is a type of behaviour that is rewarded. However, well-managed organisations that engage engineers to handle and improve current activities and at the same time have sufficient innovative capacity to anticipate possible problems, can make changes to ensure effective outcomes and develop new solutions through innovative behaviour. The significant element for this approach is creativity. Therefore, creating a work environment which fosters innovation and allows engineers to utilise their creative abilities is important (Panuwatwanich et al., 2009a).

From a public viewpoint, it seems that engineering creativity is quite limited since engineering work tends to incrementally diffuse new knowledge and technology. Another perception is that engineers are hesitant to be creative and innovate (Galloway, 2004). Consequently, engineering tasks are often not major breakthroughs to the extent that would characterise the engineer as an innovator. Furthermore, these tasks are usually accomplished by teams and organisations, and therefore must attribute success to a group not an individual. However, despite this perception of limited creativity, most engineering

work is inherently creative since it requires the synthesis and application various concepts to generate an outcome that is substantially different. Engineers must use both their intuitive and analytical problem solving skills to synthesise and execute new solutions which demonstrate their innovation ability to ensure that they are involved in the initial stages of projects through their implementation stage (Williamson et al., 2013).

Another key factor to be considered is that administrative reforms over the last three decades have had significant ramifications on the number of engineers in the public sector. Of these reforms, competition policy, privatisation, contracting out, and commercialisation have impacted engineers (Yates, 2001). For example, an emerging body of evidence indicates a significant decline in the number of professional engineers in the Australian national, state, and local government sectors (McGrath-Champ et al., 2011). The shortage of engineering professionals poses a critical problem for most public services. In a recent survey of engineers employed in the Australian Public Service (APS), it was found that one of the most common departure reasons among those engineers who indicated that they would leave their agency in the next two years was a lack of opportunities to work on innovative projects (Yates, 2012). Engineering professionals cannot utilise their full capabilities if innovation in the occupation is not facilitated.

No study to date has focused specifically on the innovation process for engineering professionals in the APS. This paper aims to fill this gap in the innovation literature by exploring the relationships through which socio-psychological factors affect workplace innovation and career satisfaction. Understanding these complex relationships within the context of the APS will help management to design strategies for recruiting and retaining a high performance engineering workforce through fostering a climate for innovation in the public sector workplace.

The conceptual model is presented next, followed by the research method, results and conclusions. This conceptual model, derived from past literature, illustrates the relationship between the key constructs which constitute the climate for innovation and their role in determining innovation-related outcomes. An explanation of the model constructs, and the rationale behind their development is provided. This is followed by a discussion of the research questions and the hypothesised relationships. Lastly, an assessment of the model and its results by a series of statistical analysis is provided.

Conceptual model

This section presents the formulation of the conceptual model developed to address the identified research gap. The conceptual model was formulated using prior empirical evidence and theory and examined causal relationships among the identified constructs. The conceptual model consists of four constructs that have been observed in a diverse range of innovation and creativity literature. The conceptual model logically conjectures the relationships between these constructs, and is presented in Figure 1. The four hypothesised relationships have been based on a synthesis of the knowledge revealed in previous studies (e.g. Panuwatwanich et al., 2008, Sarros et al., 2008).

Figure 1 Conceptual model

According to the innovation process, socio-psychological factors (consisting of leadership for innovation and ambidextrous culture for innovation) have been considered significant determinants which foster workplace innovation (McMurray et al., 2013, Chan et al., 2014). Both of the socio-psychological constructs which act as enablers are conjectured as being associated with each other, and as shown in Figure 1, each construct is also assumed to have a direct relationship with the construct of workplace innovation. Workplace innovation is also related to increased career satisfaction. Even though the degree of leadership for innovation has been recognised as a significant enabler for workplace innovation (Amabile et al., 2004, Panuwatwanich et al., 2008, Chan et al., 2014), no study to date has comprehensively examined the effect of the ambidextrous culture for innovation, the interdependence between such constructs, and their impact on workplace innovation within the public sector. Moreover, the causal relationship between workplace innovation and career satisfaction has not been substantially verified from an empirical standpoint. In addition, few studies have examined these relationships from the

engineering professional perspective in the public sector context. Each construct and the justification behind its development explained below. The conjectured relationships among the constructs are discussed the following section, hypotheses development.

Leadership for innovation

Leadership for innovation (LFI) is defined as the willingness of leaders to take risks on novel initiatives and adopt fresh perspectives. Leadership plays a vital role in building the processes, structures, and climate for an organisation to become innovative and to motivate team expectations toward innovations (Chan et al., 2014, Oke et al., 2009, Orazi et al., 2013). Leadership style is regarded as a significant factor that impacts innovation in the public sector. Wipulanusat et al. (2017a) explore the leadership styles that engineers regard as significant for innovation in the public sector. Their findings highlight the role of transformational and consideration leadership as the most critical predictor when considering the degree to which subordinates strive for creativity and innovation. *Transformational leadership (LFII)* has generally been considered more effective than other leadership styles in facilitating employee creativity and organisational innovation (García-Morales et al., 2012, Shin and Zhou, 2003). Transformational leaders inspire subordinates to recognise and perform organisational objectives and goals and have the capability to motivate followers beyond expected levels of work standards. Consequently, subordinates are likely to feel engaged and personally rewarded through their job, and work outcomes such as job satisfaction and extra effort are increased (Bass and Riggio, 2006). In contrast to leadership styles based on individual gain and the exchange of rewards for effort, transformational leaders motivate behaviour by changing the basic values, beliefs, attitudes and assumptions of subordinates. To direct and inspire individual effort, these leaders transform their subordinates by raising their awareness of the importance of organisational outcomes, which, in turn, activates their higher-order needs and induces them to transcend their own self-interests for the benefit of the organisation (Wright and Pandey, 2009). Emphasis on the mission of an organisation makes transformational leadership particularly effective in the public sector given the service and community-oriented characteristics of their responsibilities (Wright and Pandey, 2009). The transformational leader encourages new ideas and practices by supporting subordinates with sufficient autonomy and discretion for innovation to emerge (Gumusluoglu and Ilsev, 2009). Similarly, transformational leadership has been shown to

increase employee empowerment, even in public sectors associated with high levels of bureaucracy and a strict hierarchy (Park and Rainey, 2008).

In addition to transformational leadership, the characteristics of *consideration leadership (LFI2)* also play a vital role in innovation outcomes (Yukl, 2006). Consideration is the degree to which a leader shows concern and expressions of support for subordinates, looks out for their welfare, treats members as equal, and displays warmth and approachability (Bass and Bass, 2009). Consideration leader behaviors provide a work environment of emotional support, friendliness, warmth, and trust for followers. Some exemplary behaviours are helping and advising followers regarding personal problems, being approachable, and expressing appreciation and support (Lee and Kwak, 2014). Consideration leadership promotes empowerment of individual subordinates, and this relates to innovative behaviour and effectiveness. According to De Jong and Den Hartog (2007), the empowering manager perceives the influence of individuals and work groups and thus, creates an innovative climate where subordinates can achieve better results in their innovative initiatives. Staff are likely to respond positively to leaders who are considerate and also genuine.

The prevalence of innovation studies has uniformly asserted the role leadership plays in inculcating the organisational culture for innovation (Jung et al., 2003, Yukl, 2006) and leadership style has been found by many researchers to influence workplace innovation (Damanpour and Schneider, 2009, Gumusluoglu and Ilsev, 2009). Thus, it can be anticipated that leadership is a significant determinant of organisational culture and workplace innovation.

Ambidextrous culture for innovation

Most scholars have asserted the role of organisational culture in the successful management of innovation in the public sector (Kim and Yoon, 2015, Wynen et al., 2014). *Ambidextrous culture for innovation* is defined as an organisation's shared norms and basic values to establish innovative practices, procedures, policies and structures in the work environment, as well as suitable balance of exploration and exploitation activities (Benner and Tushman, 2003, Gibson and Birkinshaw, 2004, Martins and Terblanche, 2003). The central idea of an ambidextrous culture is comparable to the core idea of new public management (NPM). Basically, NPM can create an increase in managerial autonomy, which when merged with result control would, among other outcomes, prompt

a more innovation-oriented culture and lead to effectiveness and efficiency (Pollitt and Bouckaert, 2011).

The ambidextrous culture for innovation construct was operationalised by two factors. The first type of organisational culture is an *innovative culture (ACI1)* where an organisation orients toward experimenting with new solutions by exploring new resources, breaking through existing norms, and valuing flexibility, adaptability, creativity, risk taking, and entrepreneurship (Ireland et al., 2006). An innovative culture encourages employees to implement new services, new technologies for product development, new organizational routines and structures (Zhou et al., 2005). Innovative culture can ensure that employees' consistently perceive an innovative cultural orientation, thus serving as guidance when they face challenges affecting innovation outcomes (Lægreid et al., 2011). The second type of ambidextrous culture for innovation stresses organisational performance orientation. A *performance-oriented culture (ACI2)* can increase innovation in public sectors because governments need to respond to the demands of clients and citizens to achieve targets and performance evaluation processes (Wynen et al., 2014). According to Lægreid et al. (2011), public sectors which have strongly developed performance-oriented cultures are more likely to have both an innovative culture and promote innovative activities compared to other public sectors.

Culture for innovation was also found to be a primary antecedent for workplace innovation (Martins and Terblanche, 2003). Integrating autonomy from an innovative culture with result control from a performance-oriented culture is a characteristic of an ambidextrous culture for innovation. Although there is presently no reported empirical finding confirming the direct impact of an ambidextrous culture for innovation on workplace innovation in the public sector context, it can be hypothesised that such a relationship exists.

Workplace innovation and career satisfaction

Workplace innovation (WIT) is viewed as a contextual psychological construct which identifies and measures the behavioural aspects of innovation practices by individuals in their workplace (McMurray et al., 2013). Workplace innovation is created when an individual or a team of individuals focus on improving organisational management and technology (Totterdill and Exton, 2014). This definition highlights the interactive characteristics of workplace innovation. When workplace innovation is aligned with an

organisation's strategic objectives, it enables the development and improvement of products, processes and services leading simultaneously to an increase in organisational performance. Wipulanusat et al. (2017b) suggested that both *individual creativity (WIT1)* and *team innovation (WIT2)* were deemed appropriate proxies that could be used to measure workplace innovation among engineers in the APS.

Many of the most successful Australian organisations implement new business models based on applying individual creativity to promote organisational innovation (Cavagnoli, 2011). Individual creativity at work involves the development of practical and new solutions to workplace challenges, and providing tangible and useful outcomes for an organisation (Amabile and Pillemer, 2012). Creativity involves social interactions embedded in the work environment in which the communication and interaction between coworkers can significantly improve innovative outcomes (Yuan and Woodman, 2010). When employees perceive a work environment that fails to stimulate individual creativity, a void may occur between the level of individual creative ability and the actual amount of creativity practised within the organisation.

Team innovation is an important determinant in the capability of organisations to respond to rapidly changing and challenging working environments. Organisations are increasingly dependent on teams as the basic building blocks of modern organisations, and effective team work can facilitate the cross-fertilisation of innovative ideas (Hoch, 2013, Shin and Zhou, 2003). Team innovation refers to the introduction or application within a team of ideas, processes, products, or procedures that are novel to the team and that are designed to be useful (Eisenbeiss, 2008). It is a team's ability to develop novel ideas (i.e. creativity) and the ability to put these ideas into practice that can yield benefits to organisations (i.e. implementation). Implementation processes include selling ideas to other members and making ideas available in the organisation (Axtell et al., 2000). Team innovation thus can be operationalised as the merger of the quality and quantity of ideas that are generated and implemented.

Career satisfaction (CSF) is defined as an employee's feeling of satisfaction or dissatisfaction with their entire career. It means the positive psychological achievements that employees obtain from the intrinsic and extrinsic facets of their careers, including salary, promotion, feelings of pride and developmental chances (Armstrong-Stassen and Ursel, 2009, Barnett and Bradley, 2007).

When employees seek a deeper sense of purpose and greater intrinsic values in their careers, this is represented in the form of perceptions of the meaningfulness of their work. *Work meaningfulness (CSF1)* is defined as the amount of significance and positive meaning that employees perceive in their work (Rosso et al., 2010). Experiencing meaningfulness of work has been postulated to be a psychological state that creates career satisfaction, having the ability to use strengths at work, greater intrinsic work motivation, and organisational commitment (Littman-Ovadia and Steger, 2010).

Reward and recognition (CSF2) are significant contractual and implied agreements between an employee and an employer (Chew and Chan, 2008). A sense of return on employees' performances can come from rewards and recognition in addition to meaningful work (Saks, 2006). Organisations, however, can foster effective performance by creating and combining both extrinsic and intrinsic rewards to yield capability improvement (Gagné and Deci, 2005).

Career satisfaction is evidently related to the performance of innovation. In a survey of Hong Kong employees from various organisations, Kim et al. (2009) found that employee creativity was positively and significantly related to employees' career satisfaction. This was reinforced further by a study in the public sector context which found that organisational practice toward innovation has a positive impact on career satisfaction (Park et al., 2016). In view of these findings, it has been hypothesised that the construct of workplace innovation will directly impact on the level of career satisfaction in the public sector.

Hypotheses Development

The conceptual model illustrates the feasible relationships among the four constructs. To affirm these relationships, extant literature has been reviewed to seek the theoretical backgrounds to develop hypotheses defining the logically conjectured relationships between the constructs. These hypothetical relationships have been represented as a group of four hypotheses which were tested to answer each research question and to confirm the conjectured relationships. The following sections discuss the development of the hypotheses.

Relationship between two climate constructs

The conceptual model (see Figure 1) displays plausible relationships between the primary constructs. While these assumed relationships have been based on a broad theoretical background, relevant empirical research has been limited. Therefore, the relationships between these two constructs should be disentangled to understand the mechanisms underlying the discernment of the climate for innovation. As such, it is necessary to firstly delineate and confirm the validity of the relationship addressed in the first research question (RQ₁);

“What is the relationship between the two socio-psychological constructs (leadership for innovation and ambidextrous culture for innovation) that create a climate for innovation in the context of public sectors?”

The influence of leadership on the climate for innovation has been identified as a convergent process acting on both organisational culture and employee behaviour (Amabile et al., 2004, Damanpour and Schneider, 2009). In a study by Chan et al. (2014), structural equation modelling was used to examine 300 construction professionals in major contractor firms in Hong Kong. The study results showed a positive relationship between transformational leadership and an innovation climate (Chan et al., 2014). Regarding the relationships between leadership and organisational culture for innovation, Panuwatwanich et al. (2008) surveyed 181 design professionals employed in Australian architecture and engineering design firms and found that leadership for innovation had a strong and positive influence on culture for innovation. Sarros et al. (2008), in a survey of 1,158 managers in Australian private sector organisations, found that transformational leadership was correlated with organisational culture, mainly through the processes of articulating a vision, and to a lesser extent through the setting of high performance goals and providing individual support to employees. Similarly, a study of 32 Taiwanese companies conducted by Jung et al. (2003) revealed that the recognition of organisational support for innovation was directly influenced by transformational leadership.

From a public sector perspective, Kim and Chang (2009), in a study of 46 departments in the Korean central government, asserted that governmental leaders required management skills to facilitate a culture of change for ongoing and successful innovation. Based on a survey of 1,576 civil servants in the Seoul Metropolitan Government, Kim and Yoon

(2015) found that the degree to which an employee perceived senior managers' transformational leadership was positively associated with employee perceptions of a favourable culture of innovation. Recently, Zacher and Rosing (2015), using a sample of leaders and employees from 33 architectural and interior design firms, reported a positive association between the highest level of team innovation team leaders who fostered exploration and exploitation activities. The findings from these previous studies have led to the presumption that a higher level of innovation-conductive leadership should lead to an improved level of ambidextrous culture for innovation, hence the first hypothesis:

H₁: Leadership for innovation positively influences ambidextrous culture for innovation.

Influence of climate constructs on workplace innovation

The two climate constructs displayed in the conceptual model have also been predicted to be correlated with workplace innovation. To affirm this proposition, the relationships between the climate constructs and workplace innovation were investigated with the second research question (RQ₂).

“Does each of the two socio-psychological constructs impact on workplace innovation in the context of public sectors?”

To answer this research question, two hypotheses were developed. The direct relationship between leadership and workplace innovation was investigated first. As well as influencing the perception of the ambidextrous culture for innovation, leadership style has been found by many researchers to influence workplace innovation. For instance, a study of 725 local governments in the United States conducted by Damanpour and Schneider (2009) found that leaders' pro innovation attitudes positively influenced innovation adoption. In another study, transformational leadership was revealed to have significant effects on creativity at both the individual and organisational levels (Gumusluoglu and Ilsev, 2009). In a study of 168 Spanish firms, García-Morales et al. (2012) verified a positive relationship between transformational leadership and innovation directly and indirectly through the construction of competencies which focused on learning. Afsar et al. (2014), in a study of the five most innovative companies in China, found that transformational leadership positively affected the employee innovative behaviour, including idea generation and idea implementation. Judge et al. (2004) revealed that consideration leadership was associated with employee motivation

and was an important antecedent for organisational change. Kim and Lee (2009), in their study within the Korean Government, confirmed that the adoption and implementation of innovative projects required innovative leadership, which was characterised by effective change management, leadership commitment, and stability, and was the most significant factor in promoting the dynamics of governmental innovation. Similarly, when Kim and Chang (2009) evaluated the capacity for innovation in the Korean Government, they found leadership style presented a strong positive relationship with innovativeness. In light of these findings, it can be reasonably hypothesised that a strong leadership for innovation can lead to a high level of workplace innovation. The foregoing assumption led to the second hypothesis:

H₂: Leadership for innovation positively influences workplace innovation.

Second research question also examined the link between ambidextrous culture for innovation and workplace innovation. To support such a link from an empirical stance, Škerlavaj et al. (2010), in a study of 201 Korean companies employing more than 50 people, demonstrated a positive and statistically significant relationship between innovative culture and technological and administrative innovation. Panuwatwanich et al. (2009b) also found a positive relationship between organisational culture for innovation and innovation diffusion outcomes from the results of their structural equation modelling. Moreover, in 102 Taiwanese strategic business units, Chen et al. (2012) discovered that a strong innovative culture was a substitute for transformational leadership behaviour to facilitate technological innovation. Focusing on findings from public sectors, Kim and Yoon (2015) indicated that employee perceptions of a culture of innovation had a positive direct effect on the climate for creativity by enhancing the recognition of employee creativity, the flexibility to change, and resources for innovation. This was further reinforced by findings from Lægreid et al. (2011). Based on a survey of 121 Norwegian and Flemish state agencies, their study found that a performance-oriented culture had a positive effect on employees' perceptions of an innovative culture, which in turn influenced the generation of innovative activity. Integrating autonomy from an innovative culture with result control from a performance-oriented culture is a characteristic of an ambidextrous culture for innovation. Although there is presently no empirical finding confirming the direct impact of ambidextrous culture for innovation on workplace

innovation in public sectors, it can be instinctively proposed that such a relationship exists. This statement indicates the third hypothesis:

H3: Ambidextrous culture for innovation positively influences workplace innovation.

Contribution of workplace innovation to career satisfaction

The contribution of workplace innovation to career satisfaction was investigated to address the third research question (RQ₃).

“Does the workplace innovation increase career satisfaction in the context of public sectors?”

The findings from a study in healthcare organisations revealed that group creativity was associated with increased job satisfaction (Valentine et al., 2011). Cheng et al. (2010) conducted an empirical survey of the R&D Personnel in Taiwanese manufacturing companies. They developed a mathematical model and proved that product and process innovations were significantly and positively related to organisation performance, which in turn enhanced employee job satisfaction. Lee et al. (2014) demonstrated that an open innovation climate, comprising innovation and flexibility, outward focus, and reflexivity, had a direct effect on job satisfaction.

In the public sector context, Lambert and Hogan (2009), in a study of a Midwestern correctional facility staff in the U.S., found that perceptions of organisational innovation had statistically significant and positive associations with job satisfaction. Similarly, in a study of 175 local police officers in Spain, García-Buades et al. (2015) indicated that developing an innovation climate had a positive impact on job satisfaction. Using the results of a 2013 U.S. Federal Employee Viewpoint Survey, Park et al. (2016) discovered that organisational practices toward innovation had a positive impact on job satisfaction. In view of these findings, it has been hypothesised that the construct of workplace innovation will directly impact the level of career satisfaction in public sectors, thus the fourth hypothesis has been developed:

H4: Workplace innovation positively influences career satisfaction.

This study has proposed four hypotheses representing the relationships between the constructs of the conceptual model. Responses to the three research questions were found

through further testing of the hypotheses and the confirmation of the conjectured relationships.

Research methodology

Study design and participants

This study used data from the 2014 APS employee census, conducted by the Australian Public Service Commission (APSC). A survey instrument was administered to gather data from civil servants in Commonwealth departments using an online survey to measure employees' attitudes and opinions regarding important issues, such as leadership, agency's culture, innovation, and job satisfaction. In order to yield results representative of Australian Commonwealth civil servants stratification, four demographic characteristics was used: job classification level, agency size, agency type, and location. Previous APSC survey data have also been used in several innovation research studies, for example, by Torugsa and Arundel (2016) and Demircioglu and Audretsch (2017).

This study draws on the perspectives of engineers as key informants with the target population being the engineering profession, classified in the APSC Job Family Model as the Engineering and Technical Family. The large sample size surveyed in the State of the Service Employee Census and its widespread coverage of Federal Departments has allowed for the generalisability of the federal bureaucracy results on a national scale, including the perspectives of engineering professions because it reached the desired population of engineers within the Federal Government. In total, 3,570 survey respondents reported their type of work as Engineering and Technical profession. Responses with missing values across all of the variables were excluded leaving a total of 3,125 respondents available for this study.

The sample population represented a gender mix of 14% female and 86% male predominantly aged between 45 and 59 (49%) who had total length of service of more than 5 years (73%); 68% worked in an operational role (APS 1-6) and were well educated, with 78% holding tertiary qualifications (Bachelor or higher); 86% worked in operational agencies and 91% worked in large agencies (>1,000 employees). The distribution of the demographic profile of participants approximated the distribution of the population from which they were drawn.

Measurement

The instrument used in this paper was adapted by the researchers after an extensive review of all the questions in the 2014 APS employee census. A total of 37 survey questions were selected and grouped according to their conceptual relevance to the constructs in the proposed conceptual model. The survey evaluation scale was refined slightly to align with typical Likert scales (i.e. 1 = “strongly disagree”; 3 = “neutral” and 5 = “strongly agree”). The survey items used to measure these four constructs are shown in Appendix.

Leadership for innovation was measured using six items related to transformational leadership (e.g. *‘Your immediate supervisor’s action motivates people’* and *‘My supervisor is open to new ideas’*) and five items related to consideration leadership (e.g., *‘My supervisor treats people with respect’*). These scales emphasised the behaviours of leaders and supervisors in government agencies which were perceived by their followers as encouraging and promoting creativity and innovation in the workplace. These items determined the extent to which the respondents stated their agreement that their supervisors had strong innovation conducive behaviours.

Ambidextrous Culture for Innovation was measured using six items related to innovative culture (e.g., *‘My agency prioritises ideas development’*) and five items related to performance-oriented culture (e.g., *‘My agency prioritises goals achievement’*). These items evaluate a system of shared values and norms within the agencies that achieved a balance between exploration and exploitation to be a creative and innovative organisation. The extent to which the APS emphasised innovation as a feature of its culture was also examined.

Workplace innovation was measured using four items related to individual creativity (e.g., *‘I am able to explore new ideas’*) and three items related to team innovation (e.g., *‘My work group improves the providing service’*). This seven-item scale related to the extent an individual or a team of individuals focused on improving organisational management and technology to enable the development and improvement of products, processes and services leading simultaneously to an increase in organisational performance.

Finally, eight items were used to measure career satisfaction. Meaningful work was measured using a three-item scale (e.g., *‘My job gives me my personal accomplishment’*). The measure of reward and recognition involved four items with

questions such as, *'I am fairly remunerated for my work'* and *'I am satisfied with the recognition for my good job'*. This eight-item scale related to the positive psychological achievements that employees obtained from the intrinsic and extrinsic facets of their careers.

Structural equation modelling

Structural equation modelling (SEM) is a statistical technique used to test how well a proposed conceptual model explains or fits the sample data (Hair et al., 2010). SEM is used to assess the causal relationships among a set of unobserved variables (i.e. construct), and also describes the amount of unexplained variance (Hoyle, 2011). Particularly, SEM allows a simulant analysis of multiple interrelated dependence relationships that incorporates the observed indicators and latent constructs in graphical language, which is a powerful approach to present complicated relationships and related estimated parameters (Hair et al., 2010). The procedure for the SEM followed a two-step procedure recommended by Caplan (2010): validating a measurement model and fitting a structural model (Byrne, 2010, Hair et al., 2010). A measurement model, which is achieved through Confirmatory Factor Analysis (CFA), examines the loading relationships between latent constructs and their corresponding observed indicators to assess the validity and reliability of the measures. Structural models examine the hypothesised relationships among the latent constructs through path analysis. Both CFA and SEM were conducted using AMOS 22.0.

An assessment of model fit was performed for both steps to determine the extent to which the proposed model was a good fit for the data. Model fit is assessed through an inferential Chi-square (χ^2) and several descriptive goodness-of-fit indices. Since the Chi-square (χ^2) is known to be inflated in samples with $N > 200$ (Kelloway, 1998), the Chi-square (χ^2) and degree of freedom (df) are reported as descriptive information rather than a strong inferential test of whether a model can be accepted or rejected. Multiple alternative fit indices were employed to measure the degree of model-fit: goodness-of-fit index (GFI); comparative fit index (CFI); Tucker-Lewis index (TLI); incremental-fit index (IFI); standardized root mean square residual (SRMR); and root mean square error of approximation (RMSEA). To consider the model as having an acceptable fit, all six indices were measured against the following criteria: GFI, CFI, TLI, and IFI > 0.90 ; SRMR < 0.05 ; and RMSEA < 0.08 (Byrne, 2010, Hair et al., 2010, Hoyle, 2011).

The reliability of the model was evaluated by assessing composite reliability (CR) and average variance extracted (AVE) for the factors. The CR measures the internal reliability of all the variables in their measurement of a construct and the AVE determines the amount of variance in the measured indicators captured by the latent construct. Bagozzi and Yi (1988) suggested 0.60 and 0.50 as the minimum values for CR and AVE, respectively.

Results

Exploratory factor analysis

Exploratory factor analysis (EFA) was performed to assess the dimensionality of each construct. A principal component analysis (PCA) with varimax rotation was initially conducted to examine the validity of the construct. The values of Kaiser-Meyer-Olkin (KMO), ranging from 0.85 – 0.94, were well above the minimum acceptable level of 0.60, which indicated sampling adequacy such that the values in the matrix were sufficiently distributed to conduct factor analysis (George and Mallery, 2016). The EFA results are presented in Table 1. Four criteria were used to achieve the number of factors that best described the underlying relationship among variables, namely: latent root criterion; Catell's scree test; percentage of variance criterion; and a priori criterion (Hair et al., 2010). Based on these four criteria, all constructs consisted of a two-factor structure which were substantiated by the cumulative percentage of variance extracted, ranging from 61.1 to 77.6 per cent, as presented in Table 1.

To ensure that the items were representative of each factor, they were selected using two criteria. First, their loading values should be greater than 0.5. Second, they should only be loaded on the extracted factor, thus items that cross-loaded on two factors were dropped from each construct. One variable was cross-loaded between two factors, and was thus removed from the set of LFI measures. Finally, all constructs had a Cronbach's alpha greater than 0.70, which showed measurement scales consisting of a set of homogeneous items to measure the meaning of the factor (Hair et al., 2010).

Construct	KMO	Cumulative variance (%)	Cronbach's alpha	Factor: description
Leadership for innovation (LFI)	0.94	77.6	0.945	LFI1: Transformational leadership (6 items) LFI2: Consideration Leadership (4 items)
Ambidextrous culture for innovation (ACI)	0.90	61.1	0.890	ACI1: Innovative culture (6 Items) ACI2: Performance-oriented culture (5 items)
Workplace innovation (WIT)	0.85	69.1	0.845	WIT1: Individual creativity (4 items) WIT2: Team innovation (3 items)
Career satisfaction (CSF)	0.86	65.4	0.851	CSF1: Meaningful work (3 items) CSF2: Reward and recognition (5 items)

Table 1 Summary of EFA results

Expectedly, EFA grouped items similarly to the way they were grouped in the conceptual model, which was informed from the literature review. To examine the factor meanings, the items in each factor were observed and used as indicators for the explanations. The factors were examined and given a descriptive title that represented the characteristics of the constructs. The EFA confirmed the validity and reliability of these constructs by illustrating that the meaning of the model constructs were related to the factors. EFA also identifies the number of latent variables underlying the complete set of items. However, the preliminary EFA results for the factor structure of each construct were inadequate to establish the appropriate dimensionality of the measures which meant confirmatory factor analysis (CFA) subsequently needs to be performed. The CFA determined the overall goodness-of-fit of all the constructs and the measurement model to demonstrate the validity of the measures (Byrne, 2010).

Measurement model

A measurement model indicates the posited relationships of the observed indicators to the latent constructs, in which the constructs can be freely inter-correlated. Before testing the structural model, the measurement model was tested using CFA to ensure the goodness of fit for all the variables (Yoon and Uysal, 2005). To accurately calculate the model parameters and fit indices, CFA was conducted using the maximum likelihood (ML) approach which simultaneously minimised the discrepancies between the covariances of the observed data and the proposed model (Kline, 2015). The next step involved testing each of the four constructs in the conceptual model using CFA. This was followed by testing the overall measurement model. The results of the CFA verified that the indicators were acceptable as shown in Table 2.

Construct	α	GFI	CFI	TLI	IFI	SRMR	RMSEA	<i>p</i> -value
LFI	0.922	0.99	0.99	0.99	0.99	0.01	0.05	0.001
ACI	0.849	0.99	0.99	0.98	0.99	0.02	0.05	0.001
WIT	0.849	0.98	0.98	0.96	0.98	0.02	0.08	0.001
CSF	0.851	0.99	0.99	0.99	0.99	0.01	0.03	0.001

Table 2 Summary of CFA results for each construct

CFA was also conducted to assess a four-construct measurement model. A partial disaggregation approach was used for the measurement model because this approach reduced random error, took fewer iterations to converge, and produced stable solutions, while maintaining the multiple indicator approach (Bakker et al., 2012). Item parcels were created by averaging the questionnaire items into their respective factors and then treating them as reflective indicators of their respective construct, as presented in Figure 2.

Figure 2 Measurement model

The results of the CFA conducted on the measurement model are presented in Table 3. The CFA results demonstrated that the measurement model provided an acceptable fit to the observed data ($\chi^2 = 287.45$, $df = 14$, GFI = 0.98, CFI = 0.98, TLI = 0.95, IFI = 0.98, SRMR = 0.02, and RMSEA = 0.08). Based on the acceptable level of the fit indices, the measurement model was considered to have upheld unidimensionality.

All indicators had loadings greater than 0.50 and the t -values for each regression path surpassed the critical values of 3.29 ($p < 0.001$), confirming convergent validity (Hair et al., 2010). Almost all the indicators had R^2 values greater than 0.50. Two indicators with low R^2 values were retained in the measurement model since their loadings were substantial and highly significant. The correlation coefficient values between the two factors ranged from 0.63 to 0.87, thus indicating discriminant validity. The CR values for all factors in the measurement model ranged from 0.72 to 0.82, demonstrating that these factors had adequate internal consistency and were sufficient in their representation of the construct. All factors also had AVE values greater than 0.50, indicating that more variance was captured by the variables within each factor and they all shared more variance in the factor than with other factors. Therefore, these results indicated that the measurement model was appropriate for the subsequent structural model assessment.

Construct/factor	Loadings	t -values*	R^2	CR	AVE
<i>Leadership for Innovation</i>				0.82	0.69
LF11: Transformational leadership	0.88	f.p.	0.77		
LF12: Consideration leadership	0.78	44.12	0.61		
<i>Ambidextrous Culture for Innovation</i>				0.75	0.61
AC11: Innovative culture	0.92	f.p.	0.85		
AC12: Performance-oriented culture	0.61	32.40	0.37		
<i>Workplace Innovation</i>				0.72	0.57
WIT1: Individual creativity	0.85	f.p.	0.72		
WIT2: Team innovation	0.65	34.72	0.42		
<i>Career Satisfaction</i>				0.75	0.60
CSF1: Meaningful work	0.70	f.p.	0.49		
CSF2: Reward and recognition	0.84	39.44	0.71		

Notes: Model fit indices: $\chi^2 = 287.45$; $df = 14$, GFI = 0.98; CFI = 0.98; TLI = 0.95; IFI = 0.98; SRMR = 0.02 and RMSEA = 0.08; f.p.; Parameter is fixed for estimation purpose; *all t -values are significant at $p < 0.001$

Table 3 Measurement model results

Structural model

In accordance with Caplan (2010), after the measurement model was validated, the structural model was conducted to test the hypothesised relationships among the latent constructs. Given, SEM estimation is susceptible to deviation from multivariate normality, a test of normality was conducted prior to the analysis. The critical ratio of Mardia's multivariate kurtosis was 65.06, which was higher than the critical value of 1.96 (Sampaio, 2012). An absence of multivariate normality can inflate the chi-square value, underestimate goodness-of fit indices, and calculate inaccurate values of the standard

errors (Arbuckle, 2013, Byrne, 2010). Therefore, bootstrapping was applied to the non-normal multivariate data. The final structural model was tested using 1,000 bootstrap samples to achieve valid probability estimates (Cheung and Lau, 2008).

By examining the fit indices, the conceptual structural model might have been under-identified because the RMSEA value was found to be 0.11, which was greater than the acceptable level of 0.08. An alternative model that fits the data is required when a hypothesised model cannot be used based on unacceptable goodness-of-fit statistics. Post hoc modification of the model may be needed and this can be achieved by restricting the changes to paths that are theoretically justifiable. Post hoc modification can be successful if there is a large sample size (Lei and Wu, 2007). The sample size of 3,125 was deemed appropriate for post hoc modification. Analysis of the theoretical explanation is also required to confirm the adding path makes substantive theoretical sense (Martens and Haase, 2006). The revised model was suggested by inspecting the modification indices which identified a direct path from the ambidextrous culture for innovation construct to the career satisfaction construct. Although this path was not hypothesised earlier, sufficient support was found in the literature to support that ambidextrous culture for innovation, operationalised as perceived innovative culture and performance-oriented culture, is positively related to career satisfaction in the US Federal Government (Yang and Kassekert, 2010). The revised model was then assessed to ensure that it fit the observed data and thus, could be used as the final structural model fits the observed data. Figure 3 displays the standardised path estimates for the final structural model. The results of goodness of fit indices exhibited an acceptable level of model fit ($\chi^2 = 300.89$, $df = 15$, GFI = 0.98, CFI = 0.98, TLI = 0.95, IFI = 0.98, SRMR = 0.02, and RMSEA = 0.08). Post hoc modification should lead to an increase in explained variance or, at least, no change (Weston and Paul, 2006). No change in explained variance was evident for career satisfaction (i.e. R^2 values equal to 0.80 for both models). The revised model was then assessed to ensure it fit the observed data and thus, could be used as the final structural model fit the observed data.

Figure 3 Final structural model

For complex analyses, bootstrapping is effective in calculating biases and variances and obtaining confidence intervals. It estimates standard error which establishes statistical confidence limits. This allows the calculation of the confidence intervals of the standardised path coefficient. Table 4 shows bootstrapped path estimates (β), standardised errors (SE), and their respective 95% bias-corrected confidence intervals (i.e. the upper and lower bounds). These calculations evaluated the stability of the parameter estimates.

Path	β	S.E.	Standardised path coefficient	
			Lower bounds	Upper bounds
LFI $\rightarrow$ ACI	0.64	0.020	0.59	0.67
LFI $\rightarrow$ WIT	0.64	0.027	0.58	0.69
ACI $\rightarrow$ WIT	0.32	0.028	0.27	0.38
WIT $\rightarrow$ CSF	0.29	0.040	0.22	0.37
ACI $\rightarrow$ CSF	0.66	0.037	0.59	0.73

Table 4 Bootstrapping of standardised path coefficient

According to the estimated coefficients, leadership for innovation, which was considered as an exogenous construct, exerted a strong and positive influence on ambidextrous culture for innovation (0.64, $p < 0.001$) and workplace innovation (0.64, $p < 0.001$), thus providing support for H₁ and H₂. Ambidextrous culture for innovation had a moderate and positive influence on workplace innovation (0.32, $p < 0.001$), thus supporting H₃. The path coefficient from workplace innovation to career satisfaction was moderate and positive (0.29, $p < 0.001$), thus providing support for H₄. Finally, the new proposed path relationship from ambidextrous culture for innovation to career satisfaction

showed a significant result, indicated by the strong and positive standardised coefficient (0.66, $p < 0.001$). This demonstrated that ambidextrous culture for innovation accounted for a large degree of the variance within the career satisfaction construct (Campbell and Im, 2015).

Assessment of mediation

A mediating relationship is one which explains how a predictor influences an outcome variable (Hayes, 2009). A mediation model illustrates how a mediator variable clarifies the nature of the relationship between the independent and dependent variables (MacKinnon and Fairchild, 2009). That is how the independent variable influences the mediator variable and, as a consequence, impact on the dependent variable. The mediation effects were assessed for significance using bootstrapping, which is a statistical re-sampling method which estimated the parameters of the model strictly from the sample (Preacher and Hayes, 2008). Bootstrap-based analysis does not require a normal distribution of indirect effects, and it computes the accurate confidence intervals of indirect effects to yield a range of credible population values for the mediation effect (MacKinnon et al., 2004, Preacher and Hayes, 2008). When the lower and upper bounds of the confidence interval of indirect effects do not include zero, then indirect pathways are significant and indicate mediation (Hayes, 2009).

In order to assess mediation for the specific indirect pathway, visual basic syntax was written in user-defined estimands using a boot- strapping procedure which yielded point estimates of specific indirect effects accompanied by both confidence intervals and significance values (Arbuckle, 2013, Cheung and Lau, 2008). As shown in Table 5, the bootstrapping analysis revealed that the biased-corrected confidence intervals did not include zero. Therefore, all indirect pathways were significant and, suggested mediation for all indirect pathways in the final structural model. These results indicated that leadership for innovation exerted its indirect effect on career satisfaction through the simple mediating effect of ambidextrous culture for innovation and workplace innovation and the sequential mediating effect of ambidextrous culture for innovation through workplace innovation.

Model pathways	Point estimate	95% confidence intervals	
		Lower bounds	Upper bounds
LFI → ACI → CSF	0.312	0.264	0.363
LFI → WIT → CSF	0.138	0.097	0.184
LFI → ACI → WIT → CSF	0.044	0.032	0.061
LFI → ACI → WIT	0.169	0.142	0.202

Table 5 Bootstrapping indirect effects and 95% confidence intervals

Discussion and conclusion

Data from a large survey of engineering professionals employed in various Commonwealth of Australia departments was adopted to examine the hypothesised relationships of constructs associated with the conceptual model. All four hypotheses were supported due to the significant path. The model indicates that two social psychological constructs (i.e. leadership for innovation and ambidextrous culture for innovation) influence workplace innovation which, in turn, would improve career satisfaction. Additionally, the new proposed path relationship from ambidextrous culture for innovation to career satisfaction shows a positively significant direct relationship. Consistent with the literature, the key finding gleaned from this pattern of relationships is that the role of leaders seems to be the most significant antecedent of workplace innovation in facilitating the work environment for creativity and innovation (Damanpour and Schneider, 2009, Kim and Chang, 2009). This highlights that without effective leadership, which encourages and motivates employees to be creative with acceptable pressure of accountability, workplace innovation in federal departments is unlikely to occur. Leaders also act as champions to cultivate an ambidextrous culture for innovation in the public sector. This finding is consistent with other studies which highlight the significant role of leadership for innovation in fostering both innovative cultures and performance-oriented cultures in public sector organisations (Kim and Yoon, 2015, Lægreid et al., 2011). The indirect effect of leadership occurs by inducing a culture that fosters individual's creative ideas and enables innovation implementation within a team. This demonstrates that leaders play an important role in setting appropriate organisational conditions for public sector innovation success.

Given the scarcity of research on the ramifications of workplace innovation, perhaps the most noteworthy of the findings from the study is that workplace innovation has a significant and positive impact on career satisfaction. These findings reveal that

engineers in the Australian Federal departments regard perceptions of workplace innovation as essential for a more satisfactory career. For engineers to acquire positive feelings about their jobs, it is necessary to cultivate work environments which encourage innovation and allow them to apply their creative abilities. The empirical evidence of an additional path shows ambidextrous culture for innovation is reflected by the combination of innovative culture and performance-oriented culture exerting influence through career satisfaction. Engineers who work in an innovative culture where they are given opportunities to use a high degree of creativity and innovation to respond to challenges and resolve problems in today's fast changing situations can satisfy their career goals. In the public sector, engineers who believe performance-oriented culture is highly valued in their organisation are more likely to have greater career satisfaction (Yang and Kassekert, 2010).

This study also investigated the mediation effects within the model and revealed that the relation between leadership for innovation and career satisfaction involved simple mediation via the ambidextrous culture for innovation and workplace innovation constructs. In addition, the results revealed a sequential path from ambidextrous culture for innovation to workplace innovation as subsequent mediators between leadership for innovation and career satisfaction. This means that positive ambidextrous culture for innovation and workplace innovation sequentially mediate the relationship between leadership for innovation and career satisfaction.

However, instigating improvement strategies for the key mediating factors, namely, culture for innovation and workplace innovation, within the public service context can be challenging since efforts must overcome the rigid status quo mentality of organisation. Nevertheless, even though leaders encounter pressure to deliver expeditious and measurable performance outcomes, changes to intermediate management factors are essential to achieving long-term impacts and, more efficient and effective public services (Moynihan et al., 2012).

Implications

Overall, the findings emphasise the importance of Australian Federal departments providing opportunities for their engineers to engage in creative and innovative projects which enhance their professional careers, for example, roles involving new product and strategy development, service improvement, and technical innovation. The structural

model developed in this study could be used to underpin the implementation of a coherent and comprehensive approach to address current shortages of engineering professionals in the APS. Many agencies have experienced problems retaining engineers due to a lack of opportunities to work on innovative projects, which leads to low career satisfaction. For supervisors, it is important to focus on higher levels of the ambidextrous culture for innovation and workplace innovation constructs which relate positively to career satisfaction. This means facilitating an ambidextrous culture for innovation and workplace innovation in their agencies. To do this, supervisors need to encourage an innovative and performance-oriented culture to inculcate an ambidextrous culture for innovation. For example, supervisors should allow for some acceptable level of error, give room for individual ideas, and encourage experimentation with different ideas to facilitate an innovative culture. In addition, it is also important to provide a performance-oriented culture by monitoring and controlling goal attainment, setting standard procedures, and adhering to plans. Given that a positive attitude towards workplace innovation is important for career satisfaction, it is necessary to promote a work environment in which engineers can test ideas, reflect on lessons learned, share ideas and knowledge, implement analytical problem solving skills, and develop innovative ideas in their engineering work. Successfully implementing these strategies could improve workplace innovation and career satisfaction which would increase recognition of an engineer's contribution to their agency, thus retaining and advancing in-house engineering expertise.

Limitation and future works

While this paper provides both theoretical contributions and managerial implications, the findings should be interpreted in light of the following limitations. Firstly, most of the questionnaire items were self-reported, based on the perceptions of individual respondents, so the results may be considered subjective. However, the possibility of self-reported bias does not appear to influence the research outcomes due to evidence of construct validity between the variables. Future research could address the issue of self-reported bias by using objective metrics. Secondly, the data collected cross-sectional data from one survey and as a result, may introduce spurious relationships among the constructs and the potential for common source bias. Nevertheless, Harman's single-factor test indicated no single factor underlying the data; therefore, the common method

variance did not seem to be a critical issue. In addition, for future research, a longitudinal research design, where data is collected at different points in time, should be employed to consider the “time” factor, which is an important element in the innovation process. Thirdly, the SEM model has a limitation in that all factors were treated as indicators representing latent constructs, so the developed model displays only causal relationships between constructs. To address this limitation, Bayesian Networks (BN) should be conducted as an integrated approach for SEM to evaluate the interrelationships between the existing constructs at the factor level. Fourthly, a questionnaire survey does not qualitatively validate the conjectured relationships in the APS. Thus, interview-based data collected from case studies should be conducted to verify identified relationships, thereby offering a deeper perspective on the development of the arguments and would provide the context to understand the innovation process in the public sector. Finally, this paper uses data from the Australian Public Service which has predominantly an Anglo-Saxon culture, so some of the results may not be generalisable to eastern countries which have been exposed to Confucian values. Future research may implement the developed model to perform a comparative analysis between countries operating in these two circumstances, to compare results and to gain insights into the innovation process in both eastern and western contexts.

Appendix: Survey items

Leadership for Innovation (LFI)

Transformational leadership (LFII)

Your immediate supervisor’s action motivates people.

Your immediate supervisor’s action encourages innovation.

Your immediate supervisor’s action develops people.

Your immediate supervisor’s action achieves results.

Your immediate supervisor’s action cultivates productive working relationships.

My supervisor is open to new ideas.

Consideration Leadership (LFI2)

My supervisor communicates effectively regarding business risks that impact my workgroup.

My supervisor is accepting of people from diverse backgrounds.

My supervisor works effectively with people from diverse backgrounds.

My supervisor is committed to workplace safety.

My supervisor treats people with respect.

Ambidextrous Culture for Innovation (ACI)

Innovative Culture (ACI1)

My agency prioritises developing new ideas and encourages making suggestions.
Most managers are people who encourage innovation.
Internal communication within my agency is effective.
Change is managed well in my agency.
My agency emphasises innovation to find new solutions to problems.
My workplace provides access to effective learning and development.

Performance-oriented culture (ACI2)

Most managers are people who make sure procedures are rigorously followed.
My agency emphasises delivery, thus completing tasks is important.
Most managers are people who ensure their team delivers.
My agency prioritises achieving goals and completion to a high standard.
My agency emphasises procedure, thus delivering standardised services is important.

Workplace Innovation (WIT)

Individual creativity (WIT1)

I am able to explore new ideas about how I do my job.
I believe I would be supported if I tried a new idea, even if it may not work.
I have the time to explore new ideas about how I do my job.

Team innovation (WIT2)

In my work group, I feel comfortable to voice a different opinion.
People in my work group analyse their work to look for ways of doing a better job.
Employees believe that improving the quality of our work is our responsibility.
The people in my work group work together to improve the service we provide.

Career Satisfaction (CSF)

Meaningful work (CSF1)

My job gives me a feeling of personal accomplishment.
I enjoy the work in my current job.
My job gives me opportunities to utilise my skills.

Reward and recognition (CSF2)

I am fairly remunerated for the work that I do.
I am satisfied with the opportunities for career progression in my agency.
I am satisfied with my non-monetary employment conditions.

I am satisfied with the recognition for doing a good job.
Employees feel they are valued for their contribution.

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