

# การวิเคราะห์องค์ประกอบเชิงสำรวจและยืนยันของแบบวัดความผูกพันทางจิตใจ ต่อองค์การ

## Exploratory and confirmatory factor analysis of measurement scale for psychological attachment to an organization

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### บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาถึงโครงสร้างองค์ประกอบของปัจจัยความผูกพันทางจิตใจต่อองค์การ (Psychological Attachment to an Organization) ในรัฐบาลกลางของประเทศไทยอสเตรเลีย การวิเคราะห์ข้อมูลประกอบด้วยการวิเคราะห์องค์ประกอบเชิงสำรวจ (Exploratory Factor Analysis: EFA) และการวิเคราะห์องค์ประกอบเชิงยืนยัน (Confirmatory Factor Analysis: CFA) พบว่าแบบวัดมีคำถ้าจำนวน 8 ข้อ และมีสององค์ประกอบ คือ ความไว้วางในองค์การ (Organizational Trust) และการระบุตัวตนต่อองค์การ (Organizational Identification) โดยสามารถนำแบบวัดไปใช้สำหรับงานวิจัยความผูกพันทางจิตใจต่อองค์การของภาครัฐต่อไป ทั้งสององค์ประกอบเป็นแรงยืนหนึ่งที่เชื่อมความสัมพันธ์ของบุคคลและองค์กร บริบทของแรงจูงใจในภาครัฐนั้นมีความแตกต่างจากภาคเอกชน เนื่องจากไม่มีระบบค่าตอบแทนแบบเดียวกับภาคเอกชน เช่น โบนัส ค่าตอบแทนตามผลงาน และ สิทธิในการซื้อหุ้นของพนักงาน ดังนั้น ความไว้วางในองค์การและการระบุตัวตนต่อองค์การจึงเป็นองค์ประกอบสำคัญสำหรับความผูกพันทางจิตใจต่อองค์การของบุคคลการในภาครัฐ ด้วยผลลัพธ์กล่าว รัฐบาลจึงได้รับประโยชน์จากการชี้นำการวิเคราะห์องค์ประกอบเชิงสำรวจที่มีความผูกพันที่แน่นหน่องค์การของตนเอง

**คำสำคัญ:** ความผูกพันทางจิตใจต่อองค์การ ความไว้วางในองค์การ การระบุตัวตนต่อองค์การ การวิเคราะห์องค์ประกอบเชิงสำรวจ การวิเคราะห์องค์ประกอบเชิงยืนยัน

### Abstract

This purpose of this study is to investigate the factor structure of the psychological attachment to an organization (PAO) in the Australian Public Service (APS). Data were analyzed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Results revealed eight items with two-factor structure of the measurement scale were retained. This study also provides a reliable measurement scale to measure psychological attachment to an organization in the public sector. The two factors extracted to characterize psychological attachment to an organization were organizational trust and organizational identification, both of which contribute to a stabilizing force that connects individuals with organizations. 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 (e.g., bonuses, performance-based pay, and employee stock options), and as such organizational trust and identification are significant components of psychological attachment to an organization of employees in public sectors. As a result, governments can benefit from public servants who have developed a close association with their organizations.

**Keywords:** Psychological attachment to an organization, organizational trust, organizational identification, exploratory factor analysis, confirmatory factor analysis

**Paper Type:** Research

## 1. Introduction

Many organizations today seek to increase employee loyalty due to the difficulty of retaining employees in a labour market characterised by a strong preference for job mobility. Employees who are psychologically attached to an organization are more satisfied and more productive as they feel a need to contribute to the source of their good feelings by demonstrating high levels of citizenship behaviour (Hunter & Thatcher, 2007; O'Reilly & Chatman, 1996). Higher psychological attachment should generate employee engagement (Harrison, Newman, & Roth, 2006) and a desire to improve the organization (Withey & Cooper, 1989) because attachment leads staff to exert effort on behalf of the organization (LePine & Van Dyne, 2001). Thus, a highly psychologically-attached employee strives for solutions to improve aspects of organizational operations.

Psychological attachment is a stabilizing force that connects individuals with organizations (Ng, 2015). Two themes of research have investigated psychological attachment to an organization (PAO): research on organizational trust (OT) and on organizational identification (OI). Both factors are organizational beliefs that express some degree of relationship with an organization. Exploring the role of these constructs of psychological attachment to an organization would, therefore, be beneficial to organizations.

The research question addressed in this article is: What is the dimensionality of psychological attachment to an organization in the context of public sector?

## 2. Objective

Although the concept OT and OI determine an organization-targeted attitude in different way, little empirical research has studied the extent to which they overlap or differ (Ng, 2015). To address this problem, this study

examined whether OT and OI are distinct forms of psychological attachment to an organization. This purpose of this study is to investigate the factor structure of the psychological attachment to an organization in the Australian Public Service (APS).

## 3. Literature Review

Previous studies have posited that employees with a high level psychological attachment to an organization are more likely to be satisfied and more productive than their counterparts (Hunter & Thatcher, 2007; Vandenberg & Lance, 1992). Furthermore, connecting the factors that facilitate employees to achieve higher levels of performance, and which also increase their psychological attachment to an organization, has now become part of human resource management. Employees with a high level of organizational commitment are more likely to experience greater job satisfaction because they assess their job conditions with a more positive cognitive mindset (Vandenberg & Lance, 1992). Psychological attachment consists of the organization-targeted attitudes that reflect some degree of bonding with an organization. When employees trust their organization they are satisfied with their job because fully trusting a leader eliminates the stress created by vague job aspects and provides a sense of fulfilment due to the chivalrous intention of the organization (Young & Daniel, 2003). Employees who highly identify with their organization tend to easily create career satisfaction because when they support an organization's image they tend to focus on the positive aspects more than the negative components of their work environment (Knapp, Smith, & Sprinkle, 2014).

### 3.1 Organizational Trust

Trust in the organization can influence employee attitude by emboldening a belief that the future behaviour of the organization will be positive (Mayer, Davis, & Schoorman,

1995). In an organizational context, trust is defined from perspectives that include Rousseau et al.'s (1998) view of a psychological state consisting of the motive to admit vulnerability based upon an expectancy of positive outcomes of another party. This is supported by Mayer et al. (1995), who defined organizational trust as one party's willingness to be vulnerable to the actions of another party based on the belief that the latter party will do their duty in an interaction characterized by uncertainty. While both definitions of trust emphasize the importance of vulnerability as an outcome of trust, Mishra (1996) argues that a trusting predisposition is based on a set of variables which are believed to attain the goal of trust, namely, competency, openness, concern, and reliability.

Employees with strong organizational trust are willing to carry out tasks appropriate to the organization despite the risk that they might not follow through on their duties (Mayer et al., 1995). The willingness to become vulnerable to organizational operations is a defining trait of organizational trust (Dirks & Ferrin, 2001; McAllister, 1995). Because of the risk involved, organizational trust presents a profound construct of psychological attachment to an organization, which develops a feeling of confidence and support in an employee (Williams, 2001). Mayer et al. (1995) argue that organizational trust develops when employees accept that an organization has the virtues of benevolence, integrity, and ability. Benevolence pertains to a feeling that the organization has the motive to 'do good' to the employee, integrity relates to an impression that the organization is recognised to have values which the employee advocates, and ability correlates to perceived ability and willingness to perform the duties suitable to the organization. These virtues facilitate employees to work in an uncertain and risky environment in the organization in the future.

### 3.2 Organizational Identification

Organizational identification is the extent of a perception of unity and shared destiny with an organization (Ashforth, Harrison, & Corley, 2008; Cooper & Thatcher, 2010).

There are two elements of organizational identification. The

cognitive element reveals the perceived interests that an employee and an organization share (Ashforth et al., 2008). In contrast, the affective element reflects feelings of pride to be a member of the organization, leading to positive images of the organization and thus a positive social identity (Tajfel, 2010). The creation of organizational identification depends fundamentally on interaction, especially face-to-face interaction, amongst employees within the organization leading to mutual understanding of similar mindset and mutual belief (Tseng, Chen, & Chen, 2005). Through the process of identification, employees aim to advocate the conception that they are valuable staff members (Ashforth et al., 2008).

Organizational identification means employees realize that the values of the organization are congruent with their own personal mindset. Consequently, employees are willing to comply with the regulations, responsibilities and a code of conduct of the organization. Employees with a high level of organizational identification tend to experience higher trust and pride, higher group cohesion, less attrition and increased career satisfaction (Cooper & Thatcher, 2010; Demircioglu, 2018).

## 4. Methodology

The Australian Public Service (APS) committed to reducing the intention to quit a job or leave an agency of their employee. Therefore, it is important to understand the psychological attachment to an organization which can improve job satisfaction and may reduce the turnover intention in the public sector. This study uses data from the State of the Service Employee Census 2014, conducted by the Australian Public Service Commission (APSC). This survey instrument was administered to gather data from civil servants in the APS using an online survey. 92,143 survey respondents answered the item regarding the PAO construct. Responses with missing values across all of the variables were excluded leaving a total of 82,431 observations available for this study (89.5% response rate). Ten scale items were selected and grouped according to organizational trust and identification as shown in Table 1.

**Table 1** Scale items of psychological attachment to an organization (PAO)

<b>Organizational Identification (OI)</b>
P1. I feel a strong personal attachment to my agency.
P2. When someone praises my agency, it feels like my personal compliment.
P3. I am proud to work in my agency
<b>Organizational Trust (OT)</b>
P4. My agency genuinely cares about employees being healthy and safe at work.
P5. My agency supports employees who are injured or become ill due to work.
P6. In general, employees in my agency effectively manage conflicts of interest.
P7. In general, employees in my agency appropriately assess risk.
P8. My agency has procedures in place to manage business risks.
P9. I have confidence in the processes that my agency uses to resolve employee grievances.
P10. My agency is committed to creating a diverse workforce.

The validity of the measurement scale was evaluated using factor analysis, which was conducted using two sequential approaches: (1) exploratory factor analysis (EFA) and (2) confirmatory factor analysis (CFA). EFA was conducted to increase the reliability of the scale by removing inappropriate items and to identify the dimensionality of constructs by examining relations between items and factors (Netemeyer, Bearden, & Sharma, 2003; Wipulanusat, Panuwatwanich, & Stewart, 2017a). Following EFA, CFA was performed to assess the overall goodness-of-fit of all the constructs to determine the validity of the measures (Byrne, 2013; Wipulanusat, Panuwatwanich, & Stewart, 2017b). The main purpose of CFA is to investigate the relationships among the latent and manifest variables using logic or theory.

## 5. Results

The sample population represents a gender mix of 57% female and 43% male. Most of the employees have

total length of service for more than 5 years (78%) and are well educated, with 65% holding tertiary qualifications. About 68% have worked in operational agencies and 88% have worked in large agencies (>1,000 employees). The distribution of these variables approximated the distribution of the population from which they were drawn.

### 5.1 Descriptive Analysis

Descriptive analysis was employed to gain a feel for the data. This section evaluates and interprets the mean values of all ten variables as presented in Table 2. In relation to the level of psychological attachment to an organization, according to the mean value which ranged from 3.18 to 3.78, all ten variables associated with this scale were perceived to be moderate.

**Table 2** Covariance structure analysis: descriptive statistics

Variable	Mean	Std. Dev.	Skewness	Kurtosis
P1	3.57	0.99	-0.61	0.01
P2	3.41	0.96	-0.41	-0.19
P3	3.78	0.87	-0.80	0.90
P4	3.64	0.94	-0.95	0.83
P5	3.66	0.88	-0.82	0.99
P6	3.51	0.83	-0.76	0.80

Variable	Mean	Std. Dev.	Skewness	Kurtosis
P7	3.52	0.81	-0.82	0.77
P8	3.64	0.75	-0.88	1.42
P9	3.18	0.99	-0.43	-0.24
P10	3.74	0.83	-0.82	1.24

The degree to which an employee sees their organization as part of their personal identity was asked. APS employees seemed to feel a strong personal attachment to their agency (variable P1; 3.57) and feel ownership in their organization (variable P2; 3.41). They were likely to be proud to work in their agency (variable P3; 3.78).

Most employees indicated they had moderate confidence in their agency's processes to resolve employee grievances (variable P9; 3.18). Alternative dispute mechanisms are increasingly being implemented to settle employee grievances or complaints, to rebuild trusting relationships in the workplace. Most subordinates agreed that employees in their agency appropriately assessed risk (variable P7; 3.52) and had positive perceptions of how their agency managed business risks (variable P8; 3.64). Employees also agreed with the statement that employees effectively managed conflicts of interest (variable P6; 3.51). An organization's safety culture reflects workplace safety values and beliefs held by employees in an organization. Employees scored their agencies quite highly for health and safety at work (variable P4; 3.64) and there was support for employees who were injured or became ill at work (variable P5; 3.66). Employees agreed their agencies were committed to creating a diverse workforce (variable P10; 3.74). Building and maintaining a diverse workforce is a key priority for the APS to

bring a range of perspectives in challenging conventional thinking, encourage different approaches to problem solving and foster innovation.

The normality of the data was investigated by calculating the statistics of skewness and kurtosis and comparing them with the 'rule of thumb values' of  $\pm 2.58$  (Hair, Black, Babin, & Anderson, 2010). Skewness measures symmetry which affects tests of means, while kurtosis is a measure of how the peakedness of a distribution impacts tests of variances and covariances. The skewness values ranged from -0.95 to -0.41, and were thus inside the threshold, which indicated that the respondents answered these questions similarly. The kurtosis values ranged from -0.24 to +1.42, again falling within the recommendation range (see Table 2).

### 5.2 Exploratory Factor Analysis

The exploratory factor analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 25. As shown in Table 3, the Kaiser-Meyer-Olkin (KMO) value of the variables was 0.883, which indicated sampling adequacy for the analysis. The value obtained by Bartlett's test of sphericity,  $\chi^2 (45)$  was 410380.99, which was highly significant at  $p < 0.001$  level, indicating that that correlations among the variables were large enough for an EFA.

**Table 3** KMO and Bartlett's Test

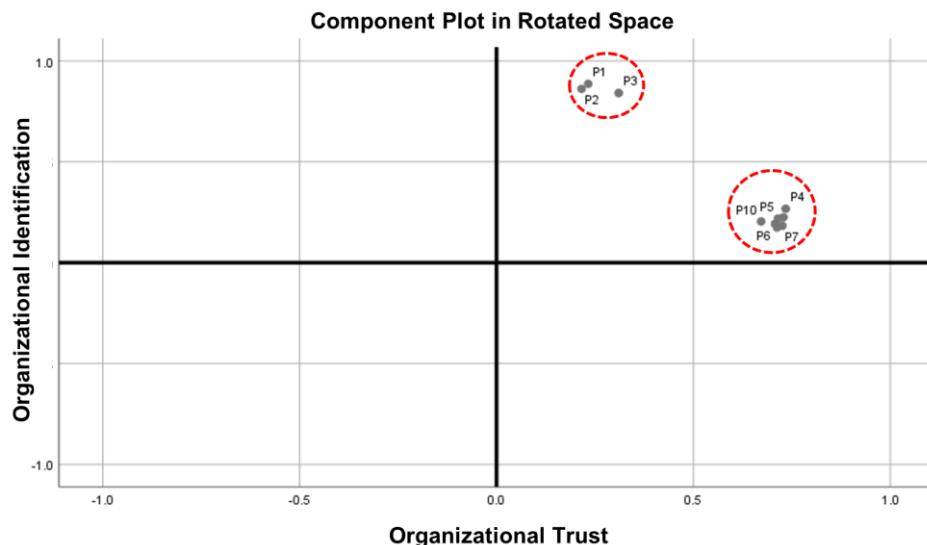
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.883
Bartlett's Test of	Approx. Chi-Square	410380.991
Sphericity	df	45
	Sig.	.000

EFA can be examined through a geometrical approach where factors in a coordinate system can be visualized by variables plotted on the axes of a graph. The factor axes act as a reference frame to determine where the variables

can be placed using coordinates. The variables were plotted as a function of the factors, as shown in Figure 1. Seven variables (P4, P5, P6, ..., P10) had high factor loadings (i.e., a strong relationship) with factor 1 (organizational trust: horizontal axis) but

had a low correlation with factor 2 (organizational identification: vertical axis). In contrast, three variables (P1, P2, and P3) had

strong relationships with organizational identification but low correlation with organizational trust

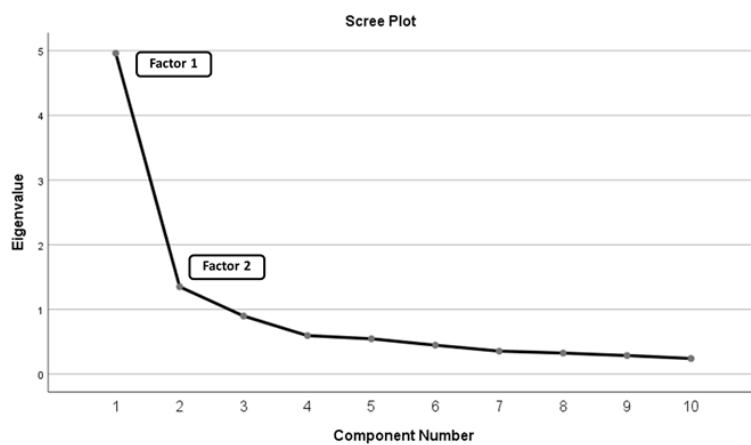


**Figure 1** A geometrical representation of the PAO construct

The scree test plots eigenvalues against the number of factors to determine where a significant drop presents within factor numbers (Pallant, 2013; Wipulanusat, Panuwatwanich, & Stewart, 2017c). Examination of the scree plot indicated that a sudden change of slope occurred after the second component (See Figure 2). EFA was conducted using

principal component analysis (PCA) with varimax rotation to identify latent factors. The factor inclusion criterion was based on eigenvalues greater than 1 and the scree plot point of inflection. These ten variables were loaded onto two factors with eigenvalues greater than 1 and

accounted for 63.1 percent of the explained variance. A Catell's scree test, which essentially invokes a maximum number of factors that would facilitate interpretation, identified that a total of two factors would be more logically consonant for further analysis. The variables with high loadings on component 1 were concerned primarily with organizational identification. The variables with high loadings on component 2 centred on organizational trust. Finding from this study indicates that organizational trust and organizational identification are the most important forms of psychological attachment to organizations in the APS workplace.



**Figure 2** Scree plot of the PAO construct

Prior to extracting factors, communality estimates must be generated. Communality is the proportion of observed variance accounted for by the common factors. These values represent the total amount of variance for an item explained by the extracted factors. The communality is denoted by  $h^2$  and is the summation of the squared factor loadings of a variable across factor (Tabachnick & Fidell, 2007). Generally, a variable is excluded from the analysis if it has low communalities (less than 0.20), which means that 80% is unique variance. This is because the

objective of factor analysis is to describe the variance through the common factors (Child, 2006). As presented in Table 4, communalities ranging from 0.493 to 0.840, suggesting relatively strong data. The patterns for the rotated factor loading revealed that all variables were well above the 0.50 threshold level. Thus, 10 variables with factor loadings ranging from 0.672 to 0.886 were retained for further analysis. Based on these 10 variables, Cronbach's alpha coefficient was recomputed yielding a value of 0.886, indicating that the measurement scale was reliable.

**table 4** Rotated factor loadings of the PAO construct

Variable: Description	Rotated Component		$h^2$
	1	2	
P1. I feel a strong personal attachment to my agency.	0.886	0.233	0.840
P2. Proud in the accomplishment of my agency.	0.861	0.216	0.788
P3. I am proud to work in my agency	0.841	0.310	0.803
P4. My agency cares about employees' health.	0.267	0.734	0.611
P5. My agency supports employees injured from work.	0.219	0.715	0.559
P6. Employees can manage conflicts of interest.	0.192	0.707	0.537
P7. Employees appropriately assess their risk.	0.183	0.726	0.561
P8. My agency has procedures to manage risks.	0.174	0.712	0.537
P9. Trust in the processes uses to solve grievances.	0.225	0.729	0.582
P10. My agency creates a diverse workforce	0.204	0.672	0.493

Therefore, based on the eigenvalue and the Catell's scree test criterion, the two factors extracted from this set of variables were:

- Organizational Identification (3 variables)
- Organizational Trust (7 variables)

### 5.3 Confirmatory Factor Analysis

The result of EFA in the previous section also indicated that the 10 variables gauging the PAO construct needed to be divided into 2 factors with 3 variables associated with organizational identification (OI) and 7 variables related to organizational trust (OT). To analyse the

data using CFA, the Analysis of Moment Structures (AMOS) version 25 was employed to allow the data from an SPSS analysis set to be directly used in the AMOS calculation (Byrne, 2013). Therefore, the CFA was conducted to confirm the EFA result that organizational trust and organizational identification were the most important forms of psychological attachment to organization in the APS (see Figure 3).

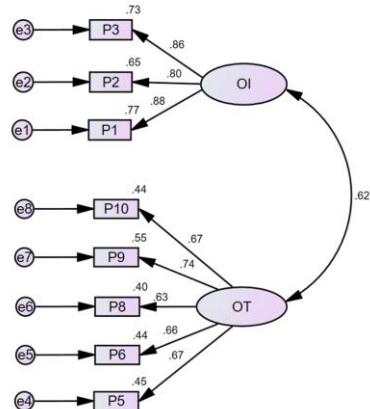


Figure 3 CFA model of the PAO construct

For the model to be considered as having an acceptable fit, all eight indices were measured against the criteria: GFI, AGFI, IFI, NFI, CFI and TLI > 0.90; RMSEA < 0.08; and RMR < 0.05. Model fit is assessed by inferential

$\chi^2$  statistic and several descriptive goodness-of-fit indices. Since the  $\chi^2$  statistic tends to be sensitive to sample size,  $\chi^2$  is used as descriptive information (Campbell & Im, 2015; Wipulanusat, Panuwatwanich, & Stewart, 2018).

The analysis of modification indices allowed for the conclusion that the initial model of confirmatory factor analysis did not fit the observed data, since variable P4 and variable P7 were associated with relatively high modification indices. Subsequent to the removal of variable P4 and variable P7, the respecified model was found to have an acceptable level of fit:  $\chi^2 = 3765.85$ ,  $df = 19$ , GFI = 0.99, AGFI = 0.98, RMSEA = 0.05, RMR = 0.02, IFI = 0.99, NFI = 0.99 CFI = 0.99, and TLI = 0.98. The CFA results of the PAO construct are presented Table 5

Table 5 Summary of CFA results for the PAO construct

Factor/Variable	Loading	t-values	$R^2$
<b>PAO1: Organizational identification</b>			
P1. I feel a strong personal attachment to my agency.	0.88	f.p.	0.77
P2. I appreciate the accomplishments of my agency.	0.80	272.29***	0.65
P3. I am proud to work in my agency	0.86	293.56***	0.73
<b>PAO2: Organizational trust</b>			
P5. My agency cares about employees' health.	0.67	f.p.	0.45
P6. Employees can manage conflicts of interest.	0.66	158.37***	0.44
P8. My agency has procedures to manage risks.	0.63	152.73***	0.40
P9. Trust in the processes used to solve grievances.	0.74	173.18***	0.55
P10. My agency creates a diverse workforce.	0.67	159.52***	0.44

The loadings of all the variables greater than 0.50, ranging from 0.63 to 0.88, were above an acceptable threshold of 0.50, and highly significant ( $p < 0.001$ ) indicated convergent validity (Hair et al., 2010). The correlation coefficient between the two factors was 0.62, being less than 0.85, which is an indicative of satisfactory discriminant validity (Tabachnick & Fidell, 2007). The  $R^2$  values of most variables were more than 0.50, indicating of the reliability of the variables (Bollen, 2014). The variables with moderate  $R^2$  values were retained because their loadings were substantial and highly significant. Given an acceptable model fit indices, the measurement scale represented by this two-factor model was considered as upholding unidimensionality. The Cronbach's alpha of organizational identification and trust

yielded values of 0.881 and 0.806, respectively, confirming the reliability of the refined construct. Overall, the measurement scale meets all the requirements for reliability, convergent validity and discriminant validity.

## 6. Conclusion

Psychological attachment to an organization (PAO) is defined as a stabilizing force connecting individuals with organizations. Higher psychological attachment generates employee engagement and a desire to improve the organization. Thus, the employee strives for solutions to improve aspects of organizational operations. Upon validation of the proposed scale, a two-dimensional structure for the PAO construct in the Australian Public Service was

identified. The two factors extracted to characterize psychological attachment to an organization were organizational trust and organizational identification, both of which contribute to a stabilizing force that connects individuals with organizations. Organizational trust occurs when one party is willing to be vulnerable to the actions of another party based on the belief that the latter party will do their duty in an interaction characterized by uncertainty. Organizational identification is the extent of a perception of unity and shared destiny with an organization in which employees realize that the values of the organization are congruent with their own personal mindsets.

psychological attachment to an organization, operationalised as organizational trust and identification, has been indicated as an immediate predictor of career satisfaction. A high level of organizational trust leads to greater career satisfaction because full trust of an employer creates explicit career expectations and fulfilment due to an organization's constructive attributes (Young & Daniel, 2003). A high level of organizational identification also creates greater career satisfaction because when an employee advocates an organization's image they are likely to highlight positive rather than negative aspects of their workplace (Knapp et al., 2014).

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 (e.g., bonuses, performance-based pay, and employee stock options), and as such organizational trust and identification are significant components of psychological attachment to an organization of employees in public sectors. As a result, governments can benefit from public servants who have developed a close association with their organizations. This conclusion is in line with the perception that the public sector's job is more secured than the private sector's. However, government size may change in the future as certain countries, e.g., the US, try to promote smaller government. Therefore, future outlook of the sector could then become a contributing factor affecting the feelings of organizational attachment, and the expected results may be worth investigating. Despite the results obtained in this study being based on the data set of APS employees, the proposed method can be readily applied to public agencies in other countries with different cultures.

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