





# Is there a relationship between ethical climate, work engagement and job satisfaction in the public sector?



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## Dates:

Received: 24 Nov. 2023  
 Accepted: 14 Feb. 2024  
 Published: 16 Apr. 2024

## How to cite this article:

Ramajoe, M.G., Bruhns, E., Van Vuuren Marais, D., & Schultz, C.M. (2024). Is there a relationship between ethical climate, work engagement and job satisfaction in the public sector? *SA Journal of Human Resource Management/SA Tydskrif vir Menslikehulpbronbestuur*, 22(0), a2499. <https://doi.org/10.4102/sajhrm.v22i0.2499>

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**Orientation:** Understanding the relationship between ethical climate, work engagement and job satisfaction in the South African public sector.

**Research purpose:** The purpose of this study was to determine whether there was a relationship between ethical climate, work engagement and job satisfaction in the South African public sector.

**Motivation for the study:** Ethical climate, work engagement and job satisfaction have been studied in different contexts, yet it is not clear how these three variables relate to one another in the South African public sector.

**Research approach/design and method:** A survey was conducted among a nonprobability convenience sample of 708 employees from a population of 17 676 employees. A quantitative research approach was applied, and correlation analysis, multiple regression analysis and structural equation modelling were used to analyse data.

**Main findings:** The study established that there was a relationship between ethical climate, work engagement and job satisfaction. The findings further showed that work engagement and ethical climate predicted job satisfaction and that ethical climate partially mediated the relationship between work engagement and job satisfaction.

**Practical/managerial implications:** This research endeavour has the potential to assist managers within the public sector of South Africa in comprehending the mediating and predictive implications of ethical climate and work engagement on job satisfaction.

**Contribution/value-add:** The study may assist employees to understand and promote the importance of ethical climate, work engagement and job satisfaction and the impact of this unique relationship in the public sector context.

**Keywords:** ethical climate; work engagement; job satisfaction; South Africa; public sector.

## Introduction

### Background and contextualisation of the study

In the public sector context, ethical climate includes organisational policies, values, procedures and practices related to attitudes and behaviours of employees (Çavuş & Develi, 2017). Ethical climate is a shared perception of correct behaviour by employees in an organisation; it results from effective organisational policies, practices, leadership and decision-making by organisational communities (Newman et al., 2017). The performance of an organisation is based on ethical climate, work engagement and the collective moral reasoning of employees (Ebitu & Beredugo, 2015).

In the public sector environment, work engagement relates to what transpires when employees are positively attentive to a task, are enthusiastic about the work they do, apply own discretion and are inspired to achieve high-performance levels (Mmako & Schultz, 2016). Work engagement has positive consequences for the well-being and performance of employees in an ethical climate; hence, work engagement should be stimulated and work overload prevented (Robijn et al., 2020). Job satisfaction is attitudinal and impacts employee perceptions of work and satisfaction levels with regard to their occupations (Chandrasekar, 2011; Meisler, 2014; Tas & Onder, 2010). Job satisfaction is an essential component of employee motivation and encouragement towards improved performance (Ferguson et al., 2011). The effectiveness of a business environment is thus dependent

on job satisfaction (Olcum & Titrek, 2015). Employees are likely to increase their performance if they experience job satisfaction (Widodo, 2014).

## Research gap and purpose

Currently, there is a paucity of literature on the relationship between ethical climate, work engagement and job satisfaction (Shafnaz, 2019), and a framework for ethical climate, work engagement and job satisfaction in the South African public sector has not yet been developed (Ozdoba et al., 2022). The study sought to close the identified research gap in literature by exploring the unique relationship between ethical climate, work engagement and job satisfaction in the South African public sector; it established that there was a mediating and predicting relationship among the variables of the study. The study acknowledged that ethical climate, work engagement and job satisfaction were constructs that could not be separated when fostering public sector excellence. The integration of ethical climate, work engagement and job satisfaction in the public sector may assist management by clarifying the newly discovered mediating effect of ethical climate on work engagement and job satisfaction as well as the newly discovered predicting effect of both ethical climate and work engagement on job satisfaction. It is against this backdrop that the research questions arose.

## Literature review

The theory of organisational behaviour in relation to ethical climate and work engagement in the public sector has two conspicuous central directions: it is orientated towards human resources and towards achieving organisational results (Nasilloyevich, 2020). In the public sector, the theory of organisational behaviour is used in management not only to reflect reality and explain it but also to influence the assumptions of employees in the organisation (Butts & Rich, 2018). Organisational behaviour theory contributes to understanding ethical behaviour and engagement with one's work, as well as the aspects that can motivate employees, strengthen work engagement and assist organisations to create a solid ethical relationship of trust with employees (Prabhu, 2020).

Herzberg's two-factor theory was analysed to reveal and emphasise the fact that in the public sector, job satisfaction and job dissatisfaction act independently within the same work environment (Bevins, 2018). Employees in the public sector work with the purpose of satisfying their own needs in terms of ethical climate, job satisfaction and continual work engagement (Bušatlić & Mujabašić, 2018). According to Herzberg's theory, job satisfaction can be influenced by two sets of factors, namely motivator and hygiene factors. Herzberg's motivation theory states that in the public sector, factors such as work assigned, remuneration and other related benefits in the work environment cause job satisfaction, whereas a separate set of hygiene factors such as the lack of management support, employee neglect, unfair

task allocation and poor working conditions can cause dissatisfaction (Mefi & Nambei, 2021).

## Ethical climate

Ethical climate refers to acceptable conduct and behaviour and how ethical matters should be managed in an organisation (Teresi et al., 2019). Experts in the field of ethical climate are of the view that the dimensions of ethical climate can be categorised as caring, rules, law and codes, independence and instrumental (Hilot, 2022). In these dimensions of ethical climate, persons would act according to their own personal moral beliefs based upon a set of well-considered principles. Individuals would also be self-guided within these dimensions (Gadi et al., 2022).

Essentially, ethical climate serves as a framework for describing ethical decision-making in organisations and can be defined in terms of common patterns found in the organisation's primary dimensions or its employees' perceptions and attitudes regarding these dimensions (Aldazabal et al., 2017). The ethical climate constructs developed by Victor and Cullen can be depicted by a two-dimensional matrix, which captures both the ethical criteria and locus of analysis involved in decision-making (Victor & Cullen, 1988). The ethical climate, derived from theories of moral philosophy, includes egoism, benevolence and principle. The locus of analysis specifies the focal point or scope of consideration when making ethical decisions, which may be at the individual, local or cosmopolitan levels (Shafer, 2015).

There are three types of ethical climate: the egoistic climate that focuses on self-interest and maximises individual behaviour; the benevolent climate that focuses on what is best for the parties under consideration; and the principled climate that focuses on following rules, laws and professional codes of conduct (Anakonda & Pesudo, 2022). An egoistic locus of analysis revolves around the self and emphasises the pursuit of self-interest. A benevolent individual places priority on friendship or personal relationships (Oh, 2022). A principled individual lives according to personal moral principles or beliefs. The local level of analysis is an emphasis on the organisational subunits (Kaur, 2017). In an egoistic local climate, the primary concern may be what is considered best for the organisation, such as profitability (Wolmarans, 2014). In a benevolent local climate, the focus may be on what is best for an organisational subunit, such as caring for the interests of all team members. In a principled local climate, the primary emphasis is on following internal organisational rules, regulations and procedures (Shafer, 2015). The cosmopolitan locus of analysis considers society's best interests in the areas of efficiency and productivity.

## Work engagement

Work engagement emerges and is demonstrated when employees master and show confidence in their job description (Consiglio et al., 2016). Work engagement is defined as 'a positive, fulfilling, work-related state of mind,

most commonly characterised by vigour, dedication and absorption' (Xu et al., 2022). Work engagement is perceived as an extremely respected quality found in employees with superior performance in the workplace and is associated with employee well-being as well as teamwork (Robijn et al., 2020).

In the public sector, there are the three variables that contribute to work engagement, namely vigour, dedication and absorption (Rayton & Yalabik, 2014). Vigorous employees are associated with energy, mental resilience, determination and investing consistent effort in a job and are characterised by the high levels of liveliness and mental strength applied to their work (Dunlop & Scheepers, 2023). Dedicated employees are inspired, enthusiastic and highly involved in their work, capabilities and experiences; they are determined, and have a sense of worth, eagerness, self-importance and inspiration (Xu et al., 2022). Absorption refers to a sense of detachment from surroundings, a high degree of concentration on a job, a general lack of conscious awareness of the amount of time spent on the job and difficulty in detaching oneself from work (Patrick & Mukherjee, 2018).

Managers who engage, inspire, strengthen and connect with employees have the ability to reduce employee turnover and burnout and to increase the levels of work engagement (Robinson, 2020). Work engagement has positive consequences in terms of the well-being and performance of employees in an ethical climate; hence, work engagement should be stimulated and work overload prevented (Robijn et al., 2020). High levels of work engagement may encourage employees to become more absorbed, productive, committed and creative and will prevent the development of stress (Patrick & Mukherjee, 2018). When employees are not engaged in their work, it causes a disconnect between their effort and their organisational effectiveness, which significantly affects an organisation's financial performance (Saks, 2017). Work engagement and organisational commitment positively impact employees' levels of energy and enthusiasm, pride in their work, job performance, commitment and health (Inaneswar & Ranjit, 2023).

### Job satisfaction

Job satisfaction can be defined as an individual's opinion about how well personal expectations at work correspond to set outcomes and attitude to work (Van Antwerpen & Ferreira, 2016). In today's competitive working environment with its demands for operational excellence, organisational performance is crucial for survival (Bušatlić & Mujabašić, 2018). In the public sector, job satisfaction can be stimulated when management offers technical assistance and work-related support to employees (Dwumah et al., 2015).

Experts in the field of job satisfaction maintain that organisations are expected to focus on the dimensions of job satisfaction and satisfy their employees in order to cope with the ever-changing and evolving work environment. Job

satisfaction relates to job performance, and managers have to implement effective human capital strategies to improve and strengthen organisational performance (Raziq & Maulabakhsh, 2015). Public sector employees find contentment in challenging and fascinating jobs (Rajbhandari, 2016). When employees are not satisfied with their remuneration and the work assigned to them, they feel uncertain about factors such as their rights, safe working conditions, cooperative co-workers, respect from their supervisors and involvement in decision-making processes (Raziq & Maulabakhsh, 2015). When supervisors are open-minded, they are able to assist in building employees' confidence, which will lead to job satisfaction, decreased employee turnover levels and increased retention rates. Research indicates that there is a positive relationship between job satisfaction and supervision (Amisshah et al., 2016).

Remuneration satisfaction refers to the employee's attitude to or perception of the pay received (Panchal, 2016). Employers need to benchmark and pay competitive wages that may be perceived as satisfactory and fair by the employee; create and administer policies that are unbiased in terms of the pay scales; promote the most qualified employees; and develop employees by providing opportunities (Ramogale, 2016). Promotion entails trust and recognition of the abilities and skills employees need to proceed to a higher position (Razak et al., 2018). Public sector employees find that holding the same position and repeating routine tasks yearly is tedious, but that can be avoided if the employee has the expectation of being promoted to a higher position with new tasks and responsibilities (Abuhashesh et al., 2019). Benefits provided to employees have grown rapidly and have a positive impact on employee job performance; therefore, employees work in a positive atmosphere with a calm mind (Nisar & Siddiqui, 2019).

### Hypotheses development

In this study, three research hypotheses were developed and investigated. The development of each of these hypotheses is discussed next.

Ethical climate, work engagement and job satisfaction are the essential aspects of organisational life and directly affect both individual and organisational outcomes and behaviours (Teresi et al., 2019). Previous studies found that an increase in the likelihood of an ethical climate in the workplace would reduce turnover when employees had a higher level of support from their line managers or supervisors, which relates to work engagement. This is a clear indication that ethical climate influences both work engagement and job satisfaction (Rubel et al., 2017).

Empirical research suggests that work engagement and job satisfaction can only be achieved in the presence of an ethical work climate and a supportive affective well-being atmosphere in the workplace (Asl et al., 2017). Figure 1 is a graphic presentation of the hypotheses.

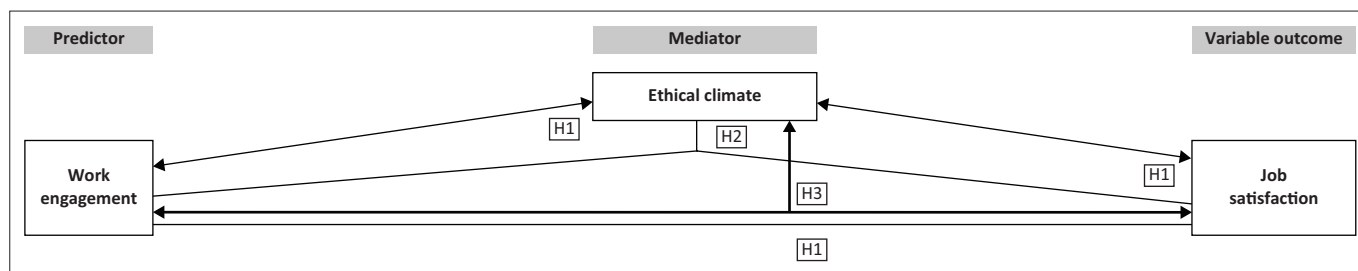


FIGURE 1: Hypothesised relationships.

## Method

### Research method

For the study purpose, existing questionnaires related to the variables of ethical climate, work engagement and job satisfaction were adapted and used. To ensure maximum respondent participation, data were collected from the sample group via online questionnaires as well as paper-based questionnaires delivered to the respondents by a fieldworker. The statistical data gathered were then analysed and conclusions were drawn. Frequencies were used to show distribution of responses through descriptive methods. Correlations and regression analysis were applied to assess associations among ethical climate, job satisfaction and work engagement.

### Population

The inclusion criteria involved employees who were permanently employed in the public sector departments. The respondents comprised administrators, secretaries, executive secretaries and personal assistants. Managers such as directors, deputy directors, assistant directors, heads of department and supervisors also participated. Altogether, the study comprised  $N_1 = 15\,203$  administrators and  $N_2 = 2\,473$  managers.

### Sampling

The study employed nonprobability convenience sampling to collect information from participants who were easily accessible to the researcher. Only permanent employees employed in the selected public sector national departments participated in this study. The study excluded employees who were employed temporarily and on a part-time basis. The sample was representative of the population. With the total population of  $N_1 = 15\,203$  administrators and  $N_2 = 2\,473$  managers, the researcher used the minimum sample size of  $n_1 = 375$  for administrators and  $n_2 = 333$  for managers, calculated according to Raosoft® calculator (Raosoft® Inc. USA), with a 5% margin of error and a 95% confidence interval ( $p \geq 0.5$ ). The demographic profiling of the respondents is presented in Table 1.

## Research approach

Research methodology is how the researcher intends to address research objectives (Kothari & Garg, 2019), allowing

TABLE 1: Demographic profiling of respondents.

Variable	Frequency (N)	%	Cumulative (%)
<b>Age</b>			
22–29 years	59	13.9	13.9
30–39 years	127	30.0	44.0
40–49 years	159	37.6	81.6
50 years or older	78	18.4	100.0
Total	423	100.0	-
<b>Gender</b>			
Male	161	38.2	38.2
Female	261	61.8	100.0
Missing	1	0.2	-
Total	423	100.0	-
<b>Administrative position</b>			
Administrator	190	73.1	73.1
Secretary	23	8.8	81.9
Executive secretary	26	10.0	91.9
Personal assistant	21	8.1	100.0
Total	260	100.0	-
<b>Manager position</b>			
Manager	26	17.8	17.8
Director	22	15.1	32.9
Deputy director	40	27.4	60.3
Assistant director	41	28.1	88.4
Head of department	4	2.7	91.1
Supervisor	13	8.9	100.0
Other (Q3)	14	3.3	-
Other (Q4)	3	0.7	-
Total	423	100.0	-
<b>Highest education qualification</b>			
Grade 12/matric	20	4.8	4.8
Certificate (1-year qualification)	14	3.3	8.1
Diploma (3-year qualification/N6)	96	22.9	31.0
Bachelor's/advance diploma/BTech	156	37.2	68.3
Honours degree/postgraduate diploma	76	18.1	86.4
Master's degree/MTech	52	12.4	98.8
Doctoral degree/DTech	5	1.2	100.0
Other	4	0.9	-
Total	423	100.0	-
<b>Duration of service at current employer</b>			
Less than 1 year	21	5.0	5.0
1–4 years	79	18.7	23.6
5–9 years	93	22.0	45.6
10–19 years	162	38.3	83.9
20–29 years	57	13.5	97.4
30 years or more	11	2.5	100.0
Total	423	100.0	-

for the idea that specific methods are appropriate for addressing particular forms of questions in research. A survey was conducted by means of a questionnaire to obtain data from respondents for statistical purposes. The study adopted



a quantitative research approach and made use of a survey as a strategy of enquiry to gather data for the study (Pathiranage et al., 2020).

## Research design

Research design is a map indicating how the study is carried out and the method used to empower the researcher in meeting the study objectives (Abutabenjeh & Jaradat, 2018). Furthermore, researchers make use of nonexperimental research designs to measure, predict and explain the degree of the relationship between two or more variables (Seeram, 2019). A correlational research design was applied in this study to establish, firstly, whether a relationship existed between ethical climate, work engagement and job satisfaction and, secondly, the extent of the impact of the relationship within a population (Apuke, 2017).

## Research instrument

The study made use of the ethical climate, work engagement and job satisfaction instruments, which was a standard and an economical way of gathering information, covering a wide range of respondents quickly without pressuring intended participants (Klok & Connors, 2019). Before the adoption of the questionnaire, the researcher compared the advantages and disadvantages of using electronic questionnaires for data collection. It was established that the advantages of electronic questionnaires outweighed the disadvantages. Responding to an electronic questionnaire consumes less time, with a decrease in travelling and processing costs while still permitting uniformity and anonymity and allowing for wide range of coverage at a time convenient to the intended respondent (Nayak & Narayan, 2019). Online data collection has a higher degree of confidentiality.

The study adapted three different questionnaires to collect data. The first adapted questionnaire was an ethical climate questionnaire developed by Cullen et al. (1993), titled 'The ethical climate questionnaire: an assessment of its development and validity'. The questionnaire comprises 22 questions pertaining to ethical climate. The second adapted questionnaire was a work engagement questionnaire developed by Schaufeli et al. (2006), titled 'The measurement of work engagement with a short questionnaire: a cross-national study'. This questionnaire comprises 18 questions. The third questionnaire used was a 'Job Satisfaction Survey' by Spector (1994), which measures job satisfaction based on how the public sector department improves the job satisfaction of its employees. The questionnaire comprises 37 questions.

To collect information on employee opinions and attitudes for all the questionnaire items, a four-point Likert scale was used, with 1 being strongly disagree, 2 being disagree, 3 being agree and 4 being strongly agree. In order to ensure

face validity, a pilot study was conducted comprising 20 respondents who were permanently employed in the public sector environment. To obtain content validity, the questionnaire was sent for review to a statistician, to the supervision team consisting of academics holding doctoral degrees, and to the Faculty Research Committee of the Faculty of Management Sciences of Tshwane University of Technology. Construct validity was ensured by conducting a confirmatory factor analysis (CFA) of the subscales.

## Data collection procedure

For the purposes of data collection, a survey research design was adopted. A questionnaire was used to collect the same set of data from all the respondents in a sample employed in the South African public sector. A total of 423 respondents ( $n_1 = 283$  administrators and  $n_2 = 140$  managers) participated in the study.

## Data analysis

Numeric data responses were first plotted on the Microsoft Excel spreadsheet and later analysed by using Statistical Package for the Social Sciences (SPSS 28). Correlation analysis was applied to measure the relationships among the three variables, and the value of the Pearson correlation coefficient was computed. For the purpose of this study, a multiple regression analysis was used to prove that ethical climate partially mediated the relationship between work engagement and job satisfaction and that ethical climate and work engagement predicted job satisfaction. To further investigate the relationship between the three variables, structural equation modelling (SEM) was used.

**Finding:** Correlation analysis signified and confirmed that there was a moderate relationship between ethical climate, job satisfaction and work engagement.

**H<sub>1</sub>:** There are significant relationships between ethical climate, work engagement and job satisfaction.

**Finding:** A multiple regression analysis determined that ethical climate and work engagement predicted job satisfaction.

**H<sub>2</sub>:** Ethical climate and work engagement predict job satisfaction.

**Finding:** The study's mediation effect analysis established that there was an indirect effect of work engagement on job satisfaction and that ethical climate partially mediated the relationship between work engagement and job satisfaction.

**H<sub>3</sub>:** Ethical climate mediates the relationship between work engagement and job satisfaction.

## Ethical considerations

The Faculty of Management Sciences Research Ethics Committee of Tshwane University of Technology gave permission to conduct the study (Ref #: FCRE2019/FR/12/002-MS [2]). The researcher stated on the informed consent form that information obtained during the course of this study would be kept strictly confidential; the identity of

the respondents and the department would not be revealed while the study was being conducted or when the results were reported. To ensure anonymity, the researcher mentioned on the informed consent form that responses were completely anonymous and that no one outside the study panel would be able to associate any response with the respondent's department in any recognisable way. The rights of the respondents were also made clear on the informed consent form, namely that participation in the study was entirely voluntary and that respondents had the right to withdraw at any stage without any penalty or future disadvantage.

The researcher adhered to the ethical principles of the Faculty of Management Sciences Research Ethics Committee of Tshwane University of Technology.

## Results

The study applied Cohen's Pearson R values to interpret the effect size. The effect size of a correlation coefficient indicates that 0.1 is a small correlation, 0.3 is a moderate correlation and 0.5 means that a large correlation exists between variables (Schober et al., 2018). For the purpose of this study, the Pearson correlation coefficient was computed using the significant 0.01 level (two-tailed). The values of correlation coefficients for ethical climate, work engagement and job satisfaction were calculated.

### Descriptive statistics

Descriptive statistics are presented by means of graphs and tables to demonstrate percentages and frequencies. A total number of 423 ( $N = 423$ ) respondents participated in the study, as reflected in Table 1.

The biographical information covers the respondents' age group, gender, position of employment, highest educational level and duration of service with the current employer.

It is worth noting that the majority of the respondents in the public sector were in the 40–49 age group, while 38.2% of the respondents were males compared to 61.8% females.

The respondents had to indicate their positions and the results illustrate that the majority of respondents were administrators (73.1%). In the category of managers, 28.1% of respondents occupied the position of assistant director. It is interesting to note that the majority of the respondents (91.9%) had a diploma, degree or postgraduate degree. Thus, most of the respondents who completed the questionnaire had tertiary qualifications and understood the objectives of the questionnaire and the research. This could prove that the public sector was taking corrective measures and was seriously considering qualifications when employing staff.

### Factor and reliability analysis

The Cronbach's alpha for the study was computed for sections B, C and D of the questionnaire. All the findings indicated an excellent internal consistency and reliability

for the questionnaire of above  $\alpha = 0.70$ . The reliability of the ethical climate scale was 0.868, and the reliability of the work engagement scale was 0.932. In order to structure and arrange the factors of job satisfaction into a manageable and meaningful form, the four factors were extracted and grouped. The reliability of the job satisfaction scales was as follows: interpersonal relations (0.726), rewards and benefits (0.786), job meaning (0.763) and recognition (0.726). The Cronbach's alpha of the scales was 0.7 and above which was acceptable (Sürücü & Maslakçı, 2020).

### Confirmatory factor analyses

For the purpose of this study, a series of CFA was conducted to establish the construct validity of the scales. A full measurement model was initially tested, where all variables were allowed to load onto their respective factors and all factors were allowed to correlate. Fit indices were calculated to determine how the model fit the data (Mustafa et al., 2020).

The measurement model was tested using CFA for the variables of interest (Baistaman et al., 2020, p. 414; Kaushik & Walsh, 2019, p. 1). Table 2 illustrates the fit indices for ethical climate.

According to the findings, a satisfactory model fit is indicated by the chi-square value of 2.108. The root mean square error of approximation (RMSEA) of 0.052 shows an acceptable, good model fit and the Tucker–Lewis index (TLI), which is 0.922, demonstrating a good model fit. The model's comparative fit index (CFI), which is 0.935, shows this can be accepted whereas an adequate fit is indicated by the standardised root mean square residual (SRMR), which is 0.048. The results demonstrate a good model fit on the components of an ethical climate as the values fit within the acceptable levels (Baistaman et al., 2020, p. 417). Table 3 illustrates the fit indices for work engagement.

The results indicate that the 3.422 chi-square value denotes a poor model fit. The model fit is satisfactory as indicated by

**TABLE 2:** Ethical climate fit indices.

Index	Value	Acceptable levels of fit indices
Chi-square/df	2.108	Value must be below 3.
RMSEA	0.052	Value must fall below 0.08 for acceptable fit, for goodness of fit below 0.05.
TLI	0.922	Values must meet or exceed 0.9 preferably $\geq 0.95$ .
CFI	0.935	Values must meet or exceed 0.9.
SRMR	0.048	Values must meet or exceed 0.8.

CFI, comparative fit index; RMSEA, root mean square error of approximation; SRMR, standardised root mean square residual; TLI, Tucker–Lewis index.

**TABLE 3:** Work engagement fit indices.

Index	Value	Acceptable levels of fit indices
Chi-square/df	3.422	Value must be below 3.
RMSEA	0.077	Value must fall below 0.08 for acceptable fit, for goodness of fit below 0.05.
TLI	0.912	Values must meet or exceed 0.9, preferably $\geq 0.95$ .
CFI	0.929	Values must meet or exceed 0.9.
SRMR	0.049	Values must meet or exceed 0.8.

CFI, comparative fit index; RMSEA, root mean square error of approximation; SRMR, standardised root mean square residual; TLI, Tucker–Lewis index.

the RMSEA of 0.077, whereas the TLI of 0.912 demonstrates a suitable model fit. The CFI of 0.929 shows that it can be accepted, whereas an adequate fit is indicated by the SRMR, which is 0.049. The results demonstrate that with the exception of the high chi-square, it is a strong model fit (Stone, 2021, p. 3). Table 4 illustrates the fit indices for job satisfaction.

The results indicate that a good model fit is indicated by the chi-square value of 2.055 and an adequate fit is shown by the RMSEA of 0.051. A good model fit is shown by TLI, which is 0.908, while a model that can be accepted is shown by CFI, which is 0.923. An acceptable fit is indicated by the SRMR, which is 0.061. The results demonstrate a good model fit of the items of job satisfaction (Stone, 2021, p. 24) as the requirements of the measurement model fit had been met.

### Correlation analysis

The correlations among the scales of ethical climate and job satisfaction ranged from a minimum of 0.062 to a maximum level of 0.517. The correlations between the scales of work engagement and job satisfaction ranged from a minimum of 0.093 to a maximum level of 0.492.

The values of correlation coefficients for ethical climate, work engagement and job satisfaction were calculated and presented in Table 5.

The correlation among work engagement and ethical climate was 0.435, and the correlation between interpersonal relations and ethical climate was 0.342. These correlations translate to

**TABLE 4:** Job satisfaction fit indices.

Index	Value	Acceptable levels of fit indices
Chi-square/df	2.055	Value must be below 3.
RMSEA	0.051	Value must fall below 0.08 for acceptable fit, for goodness of fit below 0.05.
TLI	0.908	Values must meet or exceed 0.9, preferably $\geq 0.95$ .
CFI	0.923	Values must meet or exceed 0.9.
SRMR	0.061	Values must meet or exceed 0.8.

CFI, comparative fit index; RMSEA, root mean square error of approximation; SRMR, standardised root mean square residual; TLI, Tucker–Lewis index.

**TABLE 5:** Correlation analysis of ethical climate, work engagement and job satisfaction.

Variable		Ethical climate	Work engagement
Ethical climate	Pearson correlation	-	-
Work engagement	Pearson correlation	0.435**	-
	Sig. (two-tailed)	0.000	-
Interpersonal relations	Pearson correlation	0.342**	0.200**
	Sig. (two-tailed)	0.000	0.000
Rewards and benefits	Pearson correlation	0.062	0.093
	Sig. (two-tailed)	0.207	0.056
Job meaning	Pearson correlation	0.270**	0.435**
	Sig. (two-tailed)	0.000	0.000
Recognition	Pearson correlation	0.504**	0.436**
	Sig. (two-tailed)	0.000	0.000
Job satisfaction total	Pearson correlation	0.517**	0.492**
	Sig. (two-tailed)	0.000	0.000

\*\* , Correlation is significant at the 0.01 level (two-tailed).

moderate correlations. The correlation of rewards and benefits was 0.062 and the correlation on job meaning and ethical climate 0.270. The former correlation was almost nonexistent and the latter correlation was very small. The correlation of recognition and ethical climate was 0.504, whereas the correlation among job satisfaction and ethical climate was 0.517, indicating a large correlation.

The correlation of interpersonal relations and work engagement was 0.200, and the correlation on rewards and benefits and work engagement was 0.093, indicating small correlations. The correlation among job meaning and work engagement was 0.435, between recognition and work engagement was 0.436 and between job satisfaction and work engagement was 0.492, classifying these correlations as moderate.

### Multiple regression analysis

In quantitative research, a statistical method used to predict the value of a dependent variable using one or more independent variables is called regression analysis. There are two types of regression analysis, namely simple and multiple regression analysis (Kumari & Yadav, 2018). For the purpose of this study, a multiple regression analysis was applied to ethical climate and work engagement to predict job satisfaction. The assumptions of the homoscedasticity, linearity and normality of residuals were tested. The results of the regression analysis are discussed next.

Multiple linear regression was used to investigate the extent to which ethical climate and work engagement predicted job satisfaction. The results indicated that the combination of the independent variables (ethical climate and work engagement) explained a total of 41.5% of the variance in the dependent variable. This represents a large effect size. The overall model was significant at  $F(2,412) = 146.242, p \leq 0.001$ , which was far less than the required level of 0.05, hence establishing a significant relationship. The inspection of coefficients showed that the independent variables of ethical climate ( $B = 0.292, p = 0.000$ ) and work engagement ( $B = 0.184, p = 0.000$ ) were significant predictors of job satisfaction.

A mediated multiple regression analysis was applied to establish and confirm whether there was a mediating effect of ethical climate on the relationship between work engagement and job satisfaction.

Figure 2 illustrates the direct effect of work engagement (X) on job satisfaction (Y).

Figure 3 depicts the direct effect of work engagement (X) on job satisfaction (Y) with the mediator.

For the study purposes, mediation analysis was conducted on the total scales only, because the study revealed many subscales which proved to be impractical to report on. Figure 2 and Figure 3 portray the results of the mediation tests conducted and demonstrate the direct and indirect effects of

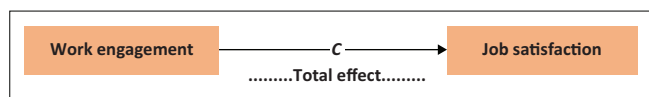


FIGURE 2: Direct effect of work engagement on job satisfaction.

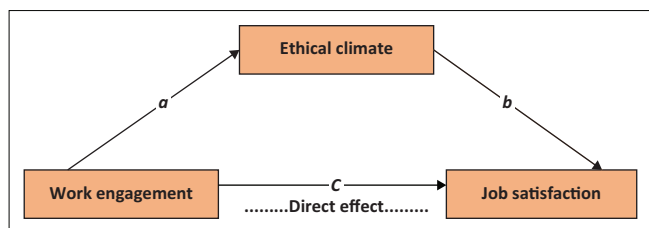


FIGURE 3: Direct effect of work engagement on job satisfaction with the mediator.

work engagement on job satisfaction; the results showed that mediation was significant. The results pertaining to the Barron and Kenny four-step approach are discussed next.

- **Step 1** established the total effect of X on Y. This represents path C in the model. In Step 1 of the mediation model, the regression of work engagement on job satisfaction, ignoring the mediator, was significant ( $B = 0.2822$ ,  $p = 0.000$ ).
- **Step 2** indicated that the regression of work engagement on the mediator, ethical climate (path a), was significant ( $B = 0.3503$ ,  $p = 0.000$ ).
- **Step 3** showed that the mediator affected the outcome variable (estimate and test path b). The relationship between ethical climate and job satisfaction was significant ( $B = 0.2673$ ,  $p = 0.000$ ), controlling work engagement.
- **Step 4** Path C established that ethical climate (M) mediated the relationship between work engagement (X) and job satisfaction (Y). The analysis revealed that with controlling of the mediator (ethical climate), work engagement at  $B = 0.1886$ ,  $p = 0.000$ , was still a substantial predictor of job satisfaction, which suggested partial mediation. Significant regression of the independent variable (work engagement) on the dependent variable (job satisfaction) was  $B = 0.2822$ , but was reduced to  $\beta = 0.1886$  when the mediator (ethical climate) was included. To achieve complete mediation, all four conditions must be met; if only three conditions are met, it signifies partial mediation (Otuya, 2019). Therefore, partial mediation was achieved.

### Structural equation modelling

To further investigate the relationships between the variables, SEM was used. Structural equation modelling is a first-generation multivariate data analysis technique used to analyse the structural relationship of measured variables and latent variables. This technique encompasses factor analysis and regression analyses (Hair et al., 2021). Additionally, SEM is known as a static analysis method using a structural approach in solving issues of approximating and testing the significance of direct and indirect effects in mediation models (Heikal et al., 2022).

For the purpose of this study, a series of confirmatory factor analyses was conducted to establish the construct validity of the scales. A full measurement model was initially tested, where all variables were allowed to load onto their respective factors and all factors were allowed to correlate. Fit indices were calculated to determine how the model fit the data (Mustafa et al., 2020). The study excluded the coefficients of ethical climate with rewards and benefits, because ethical climate was not significantly related to the rewards and recognition subscale and therefore was removed from the model.

Structural equation modelling depends on numerous statistical tests to draw conclusions on the suitability of the model's data fit. The chi-square test shows how much the covariance matrices expected and observed values differ. The expected and observed covariance matrices are typically not very different, as seen by a chi-square value that is close to zero. When the chi-square is near to zero, the probability threshold must be higher than 0.05 (Syamsudin et al., 2022, p. 4).

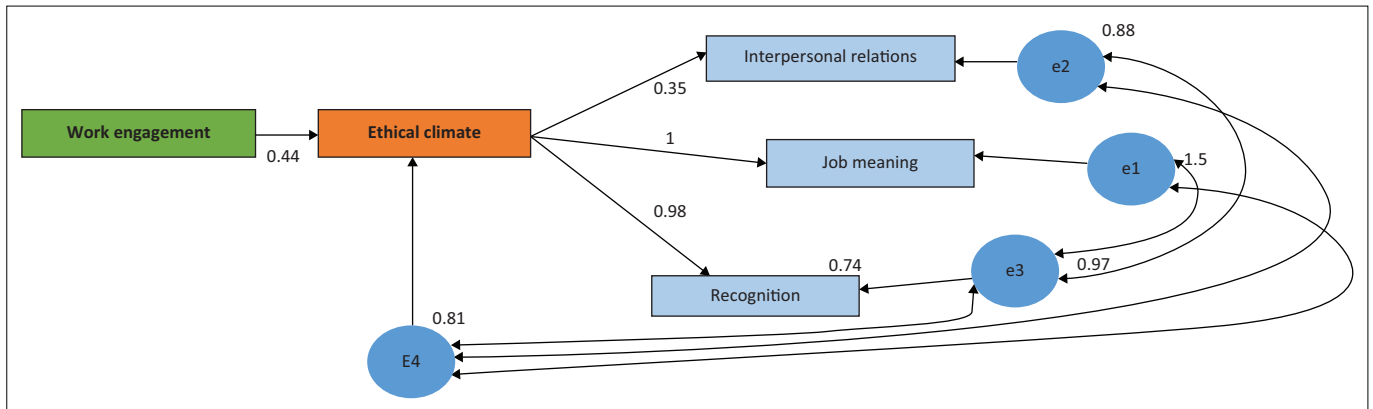
In order to determine the construct validity of the scales, a number of CFA were carried out. A comprehensive measuring model that allowed all variables to load onto their appropriate factors and allowed all factors to correlate was initially explored. In order to assess how well the model matches the data, fit indices were produced (Mustafa et al., 2020, p. 130).

With regard to responding to the study hypotheses and testing the direct and indirect effects, SEM analysed the effects of work engagement, via ethical climate, on the various aspects of job satisfaction (interpersonal relations, job meaning and recognition). The study excluded the coefficients of ethical climate with rewards and benefits, because there was no significant relationship. This factor was therefore removed and the model tested again.

Regarding the fit indices and goodness-of-fit threshold, the chi-square value of 1.815 was adequate indicating a good fit, while the root mean squared error value was within the acceptable range (0.044). Furthermore, the CFI of 0.998 and TLI of 0.980 indicated a strong model fit. Lastly, the SRMR was 0.018, falling within the acceptable level and indicating a good fit. In total, the model demonstrated a realistically acceptable fit to the observed data.

The results from the structural model demonstrated that there was a strong relationship among the latent variables ( $p < 0.05$ ) (Leo & Sardanelli, 2020). The mediation model was thus confirmed. Figure 4 displays the results of the SEM. In the SEM framework, latent variables can be built based on various observed variables. Structural equation modelling models are usually divided into two parts: the first is referred to as the measurement model, in which the relationships between observed variables and the corresponding latent constructs are assessed; the second part of the model is the structural model, which is built to analyse the structural





**FIGURE 4:** Framework for ethical climate, work engagement and job satisfaction in the South African public sector.

relationship of measured variables and latent variables (Hair et al., 2021).

Figure 4 depicts a framework for ethical climate, work engagement and job satisfaction in the South African public sector.

Figure 4 shows that there was a strong relationship between ethical climate and the related latent variables. The connection between work engagement and ethical climate showed a strong relationship at  $B = 0.435$  ( $p = 0.000$ ). The association between ethical climate and interpersonal relationships exhibited a strong relationship though it was slightly lower than the significant levels of the other variables ( $B = 0.346$ ,  $p = 0.000$ ). Furthermore, the relationship between ethical climate and recognition confirmed a very strong relationship at  $B = 0.977$  ( $p = 0.000$ ) together with ethical climate and job meaning at  $B = 0.999$  ( $p = 0.000$ ).

The unique relationship found between ethical climate, work engagement and job satisfaction suggested the hypotheses listed in Table 6.

## Discussion of findings

Numerous studies have been conducted worldwide in relation to ethical climate, work engagement and job satisfaction, but in most of them, the focus was not on examining the relationship of these three individually powerful constructs simultaneously and how they impact each other (Ozdoba et al., 2022). The bulk of the research was related to other sectors globally, with limited attention directed to the public sector. In the South African public sector context, no other study could be found to benchmark against this research (Naiyananont & Smuthranond, 2017).

The primary objective of the study was to determine, firstly, whether there was a relationship between ethical climate, work engagement and job satisfaction; secondly, whether ethical climate and work engagement predicted job satisfaction in the South African public sector; and thirdly, whether ethical climate mediated the relationship between work engagement and job satisfaction.

**TABLE 6:** Hypotheses accepted/rejected.

No.	Hypotheses	Result
H1	There is a significant relationship between ethical climate, work engagement and job satisfaction.	Accepted
H2	Ethical climate and work engagement predict job satisfaction.	Accepted
H3	Ethical climate mediates the relationship between work engagement and job satisfaction.	Accepted

*Determine if there are significant relationships between ethical climate, work engagement and job satisfaction.*

The finding was that correlation analysis signified and confirmed that there was a moderate relationship between ethical climate, job satisfaction and work engagement. Consistent with this study, previous research found a relationship among ethical climate, work engagement and job satisfaction (Menes & Haguian, 2020; Park & Johnson, 2019).

*Determine if ethical climate and work engagement predict job satisfaction.*

The finding was that multiple regression analysis determined that ethical climate and work engagement predicted job satisfaction. A previous study confirmed that ethical climate could predict job satisfaction and other constructs (Ganji et al., 2021).

*Determine the mediating effect of ethical climate on work engagement and job satisfaction.*

The finding was that mediation effect analysis established that there was an indirect effect of work engagement on job satisfaction and that ethical climate partially mediated the relationship between work engagement and job satisfaction. Currently, there is no study in the literature that simultaneously investigated the mediating effect of ethical climate on work engagement and job satisfaction, although it has been established that ethical climate has a mediating effect on job satisfaction and other constructs such as organisational virtuousness (Freirem & Pinto, 2022; Humaira et al., 2017). Therefore, this result presents a unique contribution to the literature.

## Practical implications

The dominant role demonstrated by ethical climate helps clarify the mediating effect that ethical climate has on work engagement and job satisfaction as well as the predicting effect of both ethical climate and work engagement on job satisfaction. The study could assist the public sector management and leadership to create collaborative policies allowing employees to self-regulate their behaviour in order to have a more engaged workforce. The results may also help employees to plan and forecast, because the public sector is faced with various employee behaviour challenges (Butts & Rich, 2018).

## Limitations of the study

Given the exploratory nature of the research, the reader should be aware that the study involved a sample of the South African public sector. The study cannot be generalised and does not represent administrative employees in the private sector or nonprofit organisations in South Africa.

## Recommendations

The findings from this study may be used to provide strategic direction and guidance for enhancing ethical climate, work engagement and job satisfaction in the public sector.

## Future research

In future research, a comparative study should be conducted in South Africa to benchmark successful strategies for the management of ethical climate in administrative environments.

## Conclusion

The purpose of this article was to determine, firstly, whether there was a relationship between ethical climate, work engagement and job satisfaction; secondly, whether ethical climate and work engagement predicted job satisfaction in the South African public sector; and thirdly, whether ethical climate mediated the relationship between work engagement and job satisfaction. The study established that there was a gap in the literature regarding the relationship between ethical climate, work engagement and job satisfaction in the public sector, which it set out to close. The results revealed a unique relationship among the study variables. The study concluded by providing strong evidence of a relationship among the variables: ethical climate did indeed partially mediate between work engagement and job satisfaction; and work engagement and ethical climate predicted job satisfaction. The public sector is faced with the challenge of strengthening the relationship between ethical climate, work engagement and job satisfaction. Managers are duty-bound to encourage employees to uphold and adhere to ethical practices such as compliance – working within the contract boundaries.

## Acknowledgements

Ms Magriet Engelbrecht who assisted with the language editing and Dr Liezel Korf who assisted with the statistical analysis.

## Competing interests

The authors have declared that no competing interest exists.

## Authors' contributions

Ms M.G.R. conducted her research; Dr E.B. was the supervisor, and Dr D. v. V. M. and Prof. C.S. were the co-supervisors.

## Funding information

This research received no grant from any funding agency in the public, commercial or not-for-profit sectors.

## Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

## Disclaimer

The views expressed in this article are those of the authors and not necessarily reflect the official policy or position of any affiliated agency of the authors.

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