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The Impact of Workplace Resilience on Employee Engagement: The Mediating Role of Psychological Well-being

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Abstract
The present research examines whether the relationship between workplace resilience and employee engagement is mediated by psychological well-being, specifically within the IT sector. We also studied the role of demographic variables in determining employees' psychological well-being in the workplace setting. By investigating how resilience impacts engagement, the study seeks to provide empirical evidence that enhances theoretical and practical implications for improving workforce productivity and the well-being of employees. Employing a descriptive and quantitative cross-sectional survey design, data was collected through online surveys targeting 384 employees from India's Information Technology sector. The study focuses on how resilience may foster engagement with psychological well-being as a key mediator, by employing the Job Demands-Resources model and Social Exchange Theory. All the results show positive and statistically significant relationships; however, research findings show a partial mediation between workplace resilience and employee engagement.

Keywords
Psychological well-being, Workplace resilience, Employee engagement, Demographic variables

Introduction
Employee engagement is pivotal in today's complex business environment, characterized by frequent high-pressure deadlines and a diverse workforce. Kim et al. (2016) stated that highly engaged employees contribute to reduced attrition costs, improved productivity, enhanced innovation, and better problem-solving capabilities. These employees also promote improved collaboration and demonstrate a greater ability to adapt to new technologies, fostering long-term sustainability and competitiveness. Engagement is essential for boosting individual and organizational performance, particularly within the Information Technology (IT) industry. Due to many exhausting challenges (de Lucas Ancillo et al., 2023; Tiwari & Lenka, 2020; Vahdat, 2022), IT professionals exhibited remarkable resilience and adaptability. They not only habituated to their transformed work environments but also pioneered innovative work systems to sustain and enhance their productivity and psychological well-being.

Despite this, there is a notable research gap, as many studies have not explored the combined effects of workplace resilience and employee engagement with the mediating role of psychological well-being within the IT industry (Simpson, 2009; Knight et al., 2017). There are sources of evidence that justify that workplace resilience plays a crucial role in shaping employee engagement (Cabrera-Aguilar et al., 2023; Ojo et al., 2021), however, the present study focuses more on the extent to which psychological well-being (as a mediator) will influence employees to accomplish the task when they are resilient. The author demonstrated

that engagement and resilience are two critical factors for organizational success and sustainability in modern, dynamic, and fast-changing work environments in the digital age (Ciasullo & Chiarini, 2024; Boin & van Eeten, 2013). In the face of ongoing unpredictability and transformation, it is essential to understand how psychological well-being influences employee engagement within workplace settings (Vakola & Nikolaou, 2005; Kowalski & Loretto, 2017).

Studies done by Fleetwood (2007) and Gragnano et al. (2020) suggested that work-life balance becomes even more critical when people spend over half their day at work. The present research demonstrates that employees with a more resilient state of psychological well-being are more inclined to show their resilience to overcome difficulties & complexities to contribute towards achieving corporate objectives (Kumprang & Suriyankietkaew, 2024), whereas a lack of psychological well-being can result in reduced performance (Johnson et al., 2005; Wright & Cropanzano, 2000), absenteeism rates, and higher employee turnover ultimately affect overall efficacy (Kundi et al., 2020). By incorporating Social Exchange Theory (Cropanzano & Mitchell, 2005) and the Job Demands-Resources model (Radic et al., 2020) examines how these theoretical frameworks interact with empirical evidence to understand their collective impact on organizational performance. The research further explores the implications for practitioners in the IT industry and offers valuable perspectives on fostering an environment that enhances employee well-being and supports long-term organizational sustainability (Biggio & Cortese, 2013). By implementing strategic interventions and fostering a supportive work environment, organizations can empower their employees to effectively navigate challenges, realize their full potential, and achieve long-term success (Naz et al., 2020). Despite this, there is a notable research gap, as many studies have not yet explored the combined effects of workplace resilience and employee engagement with the mediating role of psychological well-being within the IT industry (Simpson, 2009; Knight et al., 2017). Therefore, this study bridges the gap by examining how workplace resilience positively influences employee engagement (Cai et al., 2024) by mediating the role of psychological well-being.

Research Question

RQ1: What is the relationship between workplace resilience and employee engagement, and how is this relation mediated by psychological well-being?
RQ2: Do demographic variables influence the psychological well-being of employees?

Literature Review

Analysis from the existing literature identifies the linkage between the constructs used in this study, i.e. workplace resilience (independent variable), employee engagement (dependent variable), and psychological well-being (mediator), but our research investigates the relationship between the constructs to study our proposed conceptual model by hypothesized various relationship among the study variables in depth. We considered, how these relationships create an impact in behavioral science and organizational development. By examining the findings of numerous studies (Sihag, 2020; Soane et al., 2013; Tonkin et al., 2018), the present research seeks to elucidate how fostering resilience at the workplace can encourage creativity and cultivate a positive work environment. Constructs added in our study empirically described based on literature more accurately for better understanding of how and why these become more significant to organizational development.

Workplace Resilience (WR)

Workplace resilience is a dynamic and adaptable interpersonal skill (Gu et al., 2023) that encompasses an individual's capacity to maintain effective functioning under highly stressful conditions (Bardoel et al., 2014), recover from life-challenging circumstances (Hartwig et al., 2020) and demonstrate core personal competencies, adaptability in response to change, and recovery from adversity (Britt et al., 2016). Which involves the ability to manage challenges, cultivate efficient coping mechanisms, and adjust to situations characterized by change, particularly in stressful circumstances (Malik & Garg, 2017). While some perceive resilience as an intrinsic ability (Liang & Cao, 2021), it is more accurately understood as an essential skill applicable throughout one's career, strongly linked to overall health and well-being (Li & Hasson, 2020; Jones et al., 2024). In the workplace context, resilience functions as a mechanism that can either enhance or diminish a person's involvement (Gu et al., 2023), reflecting its evolving conceptualization over the past two decades from a simple personality trait to a more complex, developable attribute (Okojie et al., 2023).

Employee Engagement (EE)

Employee engagement is "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli, Salanova, Gonzalez-Romá, & Bakker, 2002, p.74). It also can be defined as, a positive, fulfilling, and work-related psychological state (Saks & Gruman, 2014; Jena et al., 2018). Strong engagement in the job can effectively communicate a positive attitude, which is the opposite of tiredness. Achieving full employee engagement depends on the complete degree of dedication of a company's workforce toward attaining its long-term vision (Schaufeli & Rhenen, 2008). Employee participation has been classified into three essential categories: *emotional, cognitive, and behavioral*. An individual who demonstrates emotional engagement exhibits positive emotional states toward their job and business, including enthusiasm, pride, and passion, among other emotions (Reina et al., 2018). Ho et al. (2011) revealed that cognitive engagement is the degree to which employees exhibit focus and concentration in their work, indicating a significant level of involvement in their assigned responsibilities (Joo et al., 2017). A longitudinal study (Lee et al., 2019) states that behavioral engagement is exemplified by adopting proactive behaviors, including consistently surpassing expectations, proactively taking charge, and fully participating in addressing challenges and making judgments (Ghani et al., 2023).

Psychological Well-being (PsyWlb)

Psychological well-being is a broad concept and is defined as employees' perception regarding the quality of their lives and their psychological and social functioning (Avey et al., 2010). Well-being is considered a state of happiness, pleasure (Fisher, 2010), and meaningful life (Huppert, 2009). It improves personal growth, self-realization, self-actualization, personal expressiveness, and the pursuit of meaning in life (Ryff, 1989). It consists of life satisfaction, reducing absenteeism, and increasing presenteeism among individuals (Kundi et al., 2020). Employees who are satisfied in their lives with a higher order of motivation and work tend to be more helpful and cooperative with coworkers (Abdullah et al., 2021), exhibit punctuality and have longer tenure than dissatisfied employees (Judge et al., 2001). Individuals high on psychological well-being tend to be good decision-makers and exhibit better interpersonal behaviors and high in-role performance (Taormina & Gao, 2013; Van De Voorde et al., 2012). Psychological well-being is a potentially advantageous resource that includes the capacity and ability to efficiently and quickly overcome an upcoming obstacle with a positive mindset (Kahn, 1990).

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Theoretical Background and Development of Hypothesis

Job-Demands Resources Model (JD-R)

The Job Demands-Resources (JD-R) Model developed by Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. in 2001 (Demerouti et al., 2001) is a foundational framework in organizational psychology that examines the interaction between job demand and job resources in shaping employee well-being and performance (Schaufeli, 2017). According to the JD-R model, job demands refer to the physical, psychological, social, or organizational aspects of a job that require sustained effort (Bakker et al., 2023), which can lead to certain physiological and psychological costs if unmoderated (Fernet et al., 2012). In contrast, job resources are aspects that facilitate goal achievement, reduce the impact of job demands, and encourage personal growth and development (Kaiser et al., 2020). The JD-R model posits that an abundance of job resources can buffer the negative effects of hsigh job demands, promoting employee engagement and overall well-being (Q. Wang et al., 2023). Within this framework, job resources are seen as essential for maintaining resilience in the face of stress (Bakker et al., 2014), thereby fostering a positive work environment conducive to employee engagement (Brayfield & Crockett, 1955; Schaufeli & Bakker, 2004; Yu et al., 2021). This model is particularly relevant in high-demand sectors like IT, where employees often encounter intense workloads and time pressures (Lesener et al., 2019).

Social Exchange Theory (SET)

Social Exchange Theory (SET) suggests that organizations and their employees can form a relationship through cost-benefit analysis (Blau Peter, 1986), with employee engagement being a key factor influenced by SET (Huang et al., 2016). Well-being employees have a positive social exchange; they contribute and give their best efforts. Starting new well-being initiatives is the ability of coworkers to empathize with and extend assistance when necessary (Gould-Williams & Davies, 2005). After an extensive literature review by Kim et al. (2018), the author found that assistance can significantly affect coping mechanisms and well-being for improved employee performance (Settoon et al., 1996). As per the social exchange theory, when an organization fulfills the needs of its employees, they tend to be more interested in their job performance and overall well-being, which may result in the firm's success throughout its entirety (Nahum-Shani et al., 2011; Simbula et al., 2023). Social exchange theory provides valuable resources facilitating employees' adoption of additional role behaviors, hence, this theory contributes to attaining organizational objectives (Agarwal, 2014). Psychological well-being encompasses facing the challenges of adversity and aspects of an employee's mental state such as general life satisfaction, positive affect, participation, and resilience. In a fast-paced, highly competitive modern workplace, employee engagement is crucial. Beyond rewards and benefits, higher levels of employee involvement are required because psychological well-being is essential for motivation, dedication, and participation at an individual level in an organization (Shuck & Reio, 2014).

Workplace resilience (WR) as a resource factor

Workplace resilience is a critical and necessary trait to drive productivity and engagement (Bose & Pal, 2020). Strong, resilient solid people are better at handling pressure at work, which may encourage them to participate in the completion of day-to-day tasks (Wang et al., 2017; Malik & Garg, 2017; Cooke et al., 2019). Resilient people are capable enough to manage the difficulties brought on by the ever-changing nature (Hartmann et al., 2019) and are highly dedicated, enthusiastic, committed, and willing to go beyond to succeed because they are good at overcoming stress and differences at work with ease (Bakker & Demerouti, 2008; Sanusi & Johl, 2022). Additionally, resilient employees have lowered absenteeism and burnout rates,

which leads to more reliability in their achievements and actions (Cantante-rodrigues et al., 2021).

H1. Workplace resilience has a positive influence on employee engagement.

The relationship between workplace resilience, psychological well-being, and employee engagement as a combined resource

Resilience is found as a powerful factor at the workplace, creating a positive effect when it comes to employee well-being (Yıldırım & Arslan, 2022). As the study (Grant et al., 2009) suggested that resilient employees possess a remarkable ability to stay calm under pressure, navigate challenges, bounce back, and work stress from obstacles, which shows a greater sense of control and psychological well-being. A healthy work environment fosters emotions of security and safety, enabling employees to share ideas openly and express suggestions without worrying about being judged (Viitala et al., 2015). The positive psychological process that contributes to the employee's proactive engagement in and explains their effective presenteeism (Avey et al., 2010). When an employee believes that their company gives value to them, supports them, and cares for their mental well-being, they are more likely to feel emotionally linked to their work and be more engaged toward attaining objectives (Devonish, 2016). A study carried out by Hameed et al. (2022) determined psychological well-being, and it was found that employee sense of belongingness refers to the ongoing process of self-improvement, learning, and development, which enhances the overall well-being of employees (Robertson & Cooper, 2010). Negative behavioral factors at the workplace may contribute to employee absenteeism and employees with mental strength maintain a positive outlook for those who elegantly handle challenges (Meyer & Maltin, 2010).

H2a. Workplace resilience has a positive influence on psychological well-being.

H2b. Psychological well-being positively influences employee engagement.

Unpacking the relationship between employee resilience and employee engagement: The mediating role of psychological well-being:

Research has shown that workplace resilience fosters positive psychological outcomes, which in turn can enhance employee engagement (Lu et al., 2023). For example, resilience helps individuals navigate workplace challenges and recover from setbacks, leading to improved psychological well-being (Gardner, 2020). Psychological well-being, which includes aspects like emotional balance, sense of purpose, and life satisfaction, has positively influenced employee engagement (Salas-Vallina et al., 2021). When employees are psychologically well, they are more likely to be proactive, engaged, and motivated in their work (Rasool et al., 2021). This enhanced well-being then facilitates a stronger commitment to their roles, greater job satisfaction, and increased discretionary effort at work (Kang & Busser, 2018). In the present research psychological well-being is a key mediator in the relationship between workplace resilience and employee engagement. Also, employees with higher psychological well-being tend to foster better interpersonal relationships and communicate more effectively, which can enhance employees feel more connected and valued, and are therefore more likely to engage in their work (Bailey et al., 2017).

H3. Psychological well-being mediates the relationship between workplace resilience and employee engagement.

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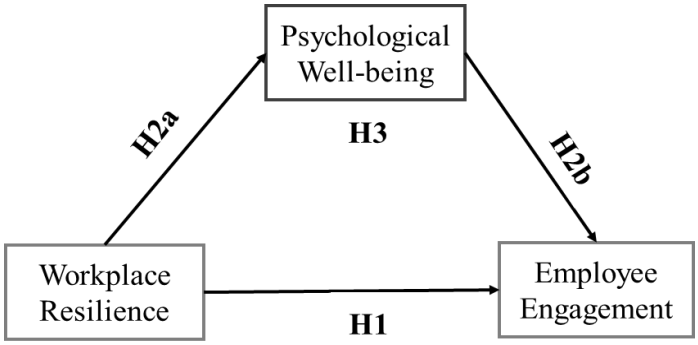

Figure 1: Proposed Conceptual Model

Materials and methods

Participants

The current research employed a quantitative research methodology. The study population comprised employees from Indian IT industries, selected through purposive sampling within a specific timeframe. Data collection was conducted exclusively online. The researcher gathered data from IT employees using WhatsApp and email services to distribute the questionnaire attachment. A total of 422 survey responses were received. Afterward, 38 incomplete forms were eliminated, and 384 responses were retained for analysis. Since the existing questionnaire has 23 items, a sample between 115 - 230 was sufficient for the study. An itemized sampling method was used to determine an estimated sample size of 384 for the target population, which recommends having 5 to 10 respondents for each item to reduce sampling errors (Hinkin, 1995).

Measures

The variables were evaluated using three instruments in this investigation. Rating responses were done by using a five-point Likert scale.

Employee Engagement

Employee engagement was measured using the shortened nine-item version of the Utrecht Work Engagement Scale (UWES-9), responses reported on a five-point Likert scale ranging from 1 = never to 5 = always which developed by (Schaufeli et al., 2006).

Workplace resilience

Workplace resilience was measured using 'The Brief Resilience Scale' developed by (Smith et al., 2008), containing six items, and all items are measured on a 5-point Likert scale. The scores on the scale range from '1 = strongly disagree to 5 = strongly agree'.

Psychological well-being

It was measured by using The Oxford Happiness Questionnaire (OHQ) developed by (Hills & Argyle, 2002), the questionnaire items were marked on a five-point frequency-based scale (1 = strongly disagree to 5 = strongly agree).

Data Analysis and Hypothesis Testing

The study used various methods to examine the data, such as summarizing the data, comparing groups, checking the consistency and accuracy of the measures, and exploring the relationships between different factors. The software SPSS 25 and AMOS 22.0 were used for the analysis. Descriptive statistics were used to give an overview of the demographic characteristics of the

sample. CFA was utilized to validate the factor structure of the constructs, ensuring that the questionnaire items accurately reflected the underlying theoretical dimensions. Then SEM was employed to test the hypothesized relationships between the constructs and to assess the model's overall fit. Fit indices were calculated using AMOS 22 to determine how well the proposed models aligned with the empirical data. And mediation analysis was conducted to examine the indirect effects, specifically assessing whether psychological well-being mediated the relationship between workplace resilience and employee engagement. ANOVA and Independent sample t-tests were conducted to examine differences in psychological well-being among various demographic groups, such as age, gender, and job position, offering insights into potential disparities.

Results

Descriptive statistics

Table 1 presents a summary of the main details about the participants. This information gives helpful insights into the characteristics of the IT workforce employees. The study's sample consisted.

Table 1. Descriptive Statistics

Variables	Frequency (n)	Percentage (%)
Gender		
Male	276	71.9
Female	108	28.1
Age		
<25 years	84	21.9
26–35 years	181	47.1
36–45 years	88	22.9
>46 years	31	8.1
Education Qualification		
Graduation	28	7.3
Post Graduation	162	42.2
Bachelors	146	38.0
Diploma	39	10.2
Others	9	2.3
Position		
Trainee	30	7.8
Team leader	157	40.9
Assistant Manager	67	17.4
Manager	57	14.8
Senior manager	40	10.4
Others	33	8.6
Income level		
3 to 6 lakhs	80	20.8
7 to 10 lakhs	173	45.1

11 to 14 lakhs	88	22.9
Above 15 lakhs	43	11.2
Years of dealing		
1 to 3 years	109	28.4
4 to 6 years	129	33.6
7 to 9 years	89	23.2
Above 10 years	57	14.8
Marital Status		
Married	257	66.9
Unmarried	127	33.1

Males represent 71.9% of the study's sample, while female participants were 28.1%. Most participants (47.1%) fell within the 26-35 age category, showing that young individuals represent a substantial percentage of the IT workforce in the early to mid-stage of their careers. The second-largest group was aged 36-45 (22.9%), while 21.9% were under 25, and 8.1% were over 46. This age distribution reveals that the workforce is relatively young. Regarding education, 42.2% of participants held postgraduate degrees, and 38.0% had bachelor's degrees, indicating a highly educated workforce. A smaller percentage (10.2%) held diplomas, and 7.3% were graduates, reflecting the IT sector's demand for advanced qualifications. This level of education may correlate with higher expectations for career development and engagement. The participants occupied various positions within their organizations, with 40.9% holding team leader roles, 17.4% as assistant managers, 14.8% as managers, and 10.4% as senior managers. Additionally, 8.6% were in other roles, and 7.8% were trainees. The income distribution showed that 45.1% of participants earned between 7-10 lakhs annually, followed by 22.9% earning 11-14 lakhs, 20.8% earning 3-6 lakhs, and 11.2% earning more than 15 lakhs. This range of income levels suggests a diverse economic background among the participants, potentially influencing their perceptions of well-being and engagement. Experience levels varied, with 33.6% of respondents having 4–6 years of experience, 28.4% with 1-3 years, 23.2% with 7-9 years, and 14.8% with more than 10 years. Regarding marital status, 66.9% of the participants reported being married, with the remaining 33.1% identifying as single.

The measurement model

All variables in this study were derived from the same source, ensuring construct validity, which was verified using the methods outlined by Fornell & F. Larcke, (1981). The internal consistency coefficient was satisfactory before testing the hypotheses (Steiger, 1990). Subsequently, a confirmatory factor analysis (CFA) was conducted using AMOS 22.0, and the fit indices were found to be within acceptable ranges: χ^2 (PCMIN/DF) = 1.859, CFI = 0.974, TLI = 0.971, RMSEA = 0.047, AGFI = 0.891, NFI = 0.945 (Byrne, 1989; Hu & Bentler, 1999). The significance levels of the factor loadings for all items vary from 0.756 to 0.925 (Ahmed et al., 2022).

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Reliability and validity

The average variance extracted (AVE) for all constructs was 0.711, which is below the Composite Reliability (CR), confirming the reliability and validity of the research model according to (Hair et al., 2020), these results confirm the reliability and validity of the research model. And as per Bagozzi and Yi (1988), results demonstrate that all constructs exceed the 0.70 CR threshold and the 0.50 AVE criterion, also that the inter-construct correlations are less than the square root of the AVE, further supporting the validity of the measurement model.

Table 2. Results of Reliability/Validity Estimates

Constructs	Mean	SD	Loading	Chronbach Alpha	CR	AVE
Employee Engagement						
EE1	4.23	1.095	0.882			
EE2	4.21	1.082	0.847			
EE3	4.20	1.057	0.853			
EE4	4.21	1.082	0.858	0.949	0.961	0.732
EE5	4.07	1.133	0.854			
EE6	4.14	1.085	0.857			
EE7	4.14	1.112	0.864			
EE8	4.23	1.018	0.823			
EE9	4.18	1.108	0.862			
Workplace Resilience						
WR1	3.91	1.080	0.835			
WR2	3.93	1.021	0.840			
WR3	3.92	1.073	0.799	0.912	0.928	0.682
WR4	3.92	1.052	0.822			
WR5	3.92	1.046	0.837			
WR6	3.96	1.009	0.822			
Psychological well-being						
PsyWlb1	3.84	1.179	0.806			
PsyWlb2	3.97	1.113	0.917			
PsyWlb3	3.85	1.126	0.805			
PsyWlb4	3.99	1.078	0.925			
PsyWlb5	3.89	1.111	0.830	0.943	0.954	0.721
PsyWlb6	4.01	1.056	0.862			
PsyWlb7	3.76	1.190	0.756			
PsyWlb8	3.91	1.136	0.876			

Note: AVE- Average Variance Extracted, CR- Composite Reliability; Reliability for all constructs= 0.964; N=384

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The Table 2 statistics infers that High reliability and strong convergent validity are shown by all three constructs: psychological well-being, workplace resilience, and employee engagement. Good internal consistency is shown by the Cronbach's Alpha values: 0.949 for EE, 0.912 for WR, and 0.943 for PsyWlb. Furthermore, the Composite Reliability scores of 0.961 for EE, 0.928 for WR, and 0.954 for PsyWlb attest to the reliability of the constructs. Each construct accounts for a significant amount of the variation, as all three of their Average variation Extracted values, 0.732 for EE, 0.682 for WR, and 0.721 for PsyWlb, are more than the suggested cutoff of 0.5. These findings collectively indicate that the items used for each construct are practical measures, providing strong evidence of the constructs' validity and reliability (Kranthi & Ahmed, 2018).

High factor loadings above 0.7 were seen in the indicators primarily employed to quantify the latent variables in the confirmatory factor analysis (CFA), which seems to have appropriate reliability when testing items, Cronbach's alpha should be greater than 0.7 (Cronbach, 1951). Using the residual error and average variance extracted (AVE) values, further research should determine how each construct explains the observed variation. AVE represents the ratio of variance explained by a latent construct to the total variance due to measurement error. The Table above shows that all constructs have acceptable AVE values greater than 0.5, indicating construct validity (Fornell & F. Larcke, 1981).

Discriminant Validity

Table 3 presents the results of the discriminant validity and it shows that the inter-construct correlations are consistently lower than the square root of the Average Variance Extracted (AVE), indicating the extent to which a construct differs from other constructs, with the square root of AVE values being greater than the highest correlation with any other construct (Fornell & F. Larcke, 1981). According to the results shown in Table 3, AVE is considered acceptable because its square root values are higher than its highest correlation with its remaining components (Bagozzi & Yi, 1988).

Table 3. Discriminant Validity-Inter-Construct Correlations

Constructs	EE	WR	PsyWlb
Employee Engagement	**0.856**		
Workplace Resilience	0.819	**0.826**	
Psychological Well-being	0.786	0.769	**0.849**

Results of SEM (Structural Equation Modelling)

The author constructed a structural model, illustrated in Figure 2, and used the Maximum Likelihood Estimation (MLE) method in AMOS 22.0 to address the primary research objective and evaluate the proposed hypotheses. The structural model fit indices were determined and accepted at threshold values as follows: χ^2/df = 2.496; GFI = 0.862; AGFI=0.833, CFI = 0.954; RMSEA = 0.063, and TLI=0.949 and the data aligned well with the model (Shi & Maydeu-Olivares, 2020; Kumaraperumal et al., 2022).

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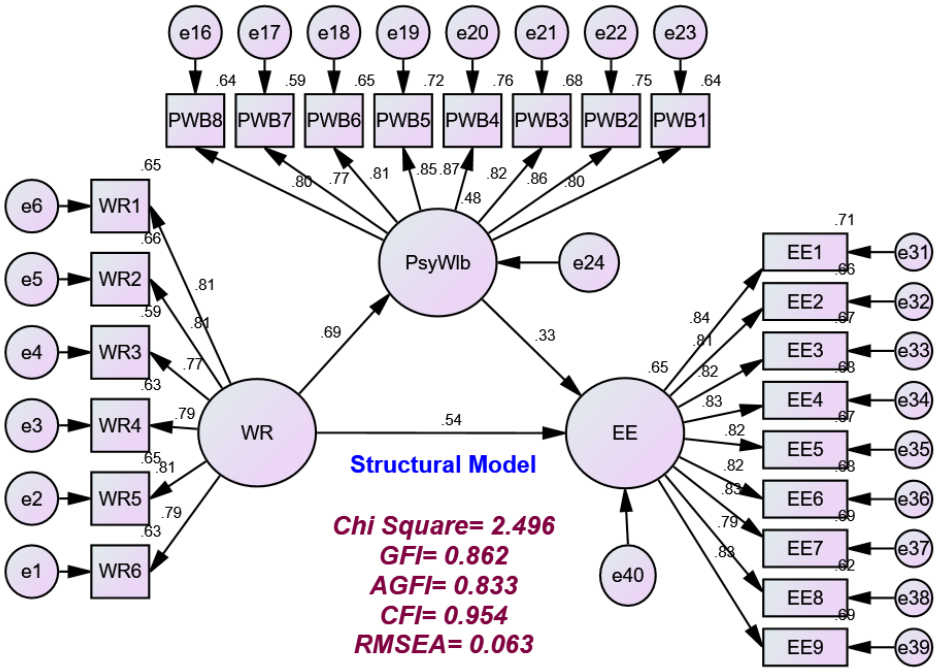

Source: *AMOS Output*

Figure 2: Structural Model

The results of SEM reveal standardized path estimates, critical ratios, and R-square values. The results presented in Table 4 show that workplace resilience significantly positively influences engagement (β =.502, t=9.502, p= <.001); these findings support Hypothesis (H1). Resilience has a positive influence on psychological well-being and is significant (β =.626, t=12.683, p= <.001), supporting hypothesis (H2a), and psychological well-being has a positive and significant impact on engagement (β =.334, t=6.133, p=<.001), supporting hypothesis (H2b) Hence, all hypotheses are positive and substantially affect all relationships and level of significance is considered significant at the 0.001 level.

Table 4. Results of SEM

Path Relationship	Std. Reg. Estimates	Critical Ratios	P-Value	Decision	R^2
Workplace Resilience→ Employee Engagement	.502	9.502	***	Supported	
Workplace Resilience → Psychological Well-being	.626	12.683	***	Supported	**0.65**
Psychological Well-being → Employee Engagement	.334	6.133	***	Supported	

Note(s): **** indicates significant at 0.001*

The R^2 of 0.65 (Table 4 and Figure 2) infers that workplace resilience and employee psychological well-being collectively explain 65 percent of the variance in employee engagement. Reveals that resilience and psychological well-being collectively explain 65

percent of the variance in employee engagement. Individuals with psychological well-being and resilience can foster an environment that helps everyone succeed. As a result, individuals have a more profound sense of belonging and intrinsic motivation, leading to heightened engagement. Employee morale affects productivity because engaged employees are more likely to go the extra mile, ultimately benefiting the industry (Grubert et al., 2023).

Mediation Analysis

The researcher proposed that the mediation hypothesis of workplace resilience impacts psychological well-being and that well-being impacts employee engagement, which supports hypothesis H3. A percentile bootstrap confidence interval technique was employed in AMOS 22.0 to calculate standardized direct, indirect, and total effects, with 5000 bootstrap resamples in a 95% confidence range (Preacher & Hayes, 2004).

Table 5. Mediation Analysis Results

Hypothesis	Relationships	Direct Effect	Indirect Effect	Total Estimate	Confidence Interval		P-Value	Results
					LB	UB		
H3	Workplace Resilience → Psy Wellbeing →Employee Engagement	.502	.209	0.711	.119	.328	0.000***	Partial Mediation

Note(s): **** indicates significance at 0.001; LB- Lower Bound; UB- Upper Bound.*
Source: *AMOS Output*

Based on the AMOS results from Table 5, Hypothesis H3 suggests that Workplace resilience, directly and indirectly, affects Employee Engagement through Psychological well-being. The direct effect is strong (0.502), with a significant indirect effect (0.209). The total impact of Workplace Resilience on Employee Engagement is 0.711, indicating a combined strong influence. The indirect impact is statistically significant (p-value = 0.000), and the confidence interval (LB=.119 to UB=.328) suggests the mediation effect is reliably estimated. Based on the results provided in the above table, it is clear that psychological well-being mediates the relationship between workplace resilience and employee engagement since an indirect effect of workplace resilience on engagement is statistically significant (p = 0.000). There is a high statistical significance at <0.001 level between workplace resilience and employee engagement through mediation. And results of the mediation analysis confirmed that there is partial mediation of psychological well-being in the relationship between workplace resilience and employee engagement, as both direct and indirect effects are significant.

Results of ANOVA

This study investigates the influence of various demographic factors like age, gender, income, educational qualification, occupation, marital status, and professional experience on psychological well-being to address the research question by using the analysis of variance (ANOVA), and Bonferroni (Post-Hoc) test.

Table 6. ANOVA

Variable	Categories	F value (p)	Significance

Age	<25 years 26–35 years 36–45 years **>46 years**	23.764	.000
Education Qualification	Graduation Post Graduation Bachelors Diploma Others	.764	.549
Position	Trainee Team leader Assistant Manager Manager **Senior Manager** Others	5.274	.000
Income level	3 to 6 lakhs 7 to 10 lakhs 11 to 14 lakhs **Above 15 lakhs**	13.493	.000
Years of dealing	1 to 3 years **4 to 6 years** 7 to 9 years Above 10 years	3.451	.017

Note: Bold groups are more significant

Age. A one-way ANOVA test was conducted, to analyze the significant differences in the mean scores of overall psychological well-being across all age groups. The differences were found significant at the <0.01 level (99%). The Bonferroni *Post Hoc* tests revealed that the mean value for < 25-year-old (n=84, M=2.172, SD=0.868) is substantially less than the mean score of > 46-year-old (n=31, M=2.187, SD=0.869), with the difference in mean = -1.390, p= 0.000; the mean result of 26-35-year-old (n= 181, M= 2.174, SD= 0.861) is notably lower than the mean result of > 46-year-old, with difference in mean scores= -1.410, p=0.000; and the mean result of 36-45 group (n=88, M=2.178, SD=0.868) is substantially less than the mean score of > 46 age group, with the difference in mean = -1.238, p=0.000. There are no additional significant variations in psychological well-being scores among different age groups.

Education Qualification. Analysis using one-way ANOVA for psychological well-being scores across various educational levels showed no significant differences, representing that the mean scores remain consistent across all education groups. This holds for all variables from which the scores are derived. The ANOVA results for education are presented in Table 6.

Position. ANOVA test was conducted, and variances were observed in the mean values of overall psychological well-being among all levels (p<0.01). The Bonferroni Post Hoc test showed that the mean values for trainees (n=30, M=3.01, SD=1.420) are much lower than the mean score of senior managers (n=40, M=3.04, SD=1.442), with mean difference= -0.785, p= 0.007; the mean values for team leader (n= 157, M= 3.04, SD=1.435) with mean difference= -0.769, p=0.000 is considerably lower than the mean score of senior managers; the mean values of assistant managers (n=67, M=3.00, SD=1.390) are lower than the mean values of senior

managers with significance, with mean differences = -0.837, *p*=0.000; and the mean values of manager level (n=57, M=3.01, SD=1.415) are lower than the mean values of senior managers with significance and mean differences = -0.700, *p*=0.004. Significant differences were not found in psychological well-being between senior managers and other groups of employees.

Income level. To know the differences in the income level groups performed one-way (ANOVA) and found differences in the mean results across all income groups other than the "others" group for overall psychological well-being. At the 0.01 level, the differences are significant. The Bonferroni Post Hoc tests showed that the mean score of 3-6 lakh income level (n=80; M=2.26; SD=1.08) is lower than the mean value of above 15 lakhs income level group (n=43, M=2.23, SD=1.00), and mean differences = -0.925, *p*=0.000 with significance; the mean values for 7-10 lakh (n= 173, M= 2.32, SD=0.96) are lesser than the mean score of above 15 lakh group, and mean differences = -0.963, *p*=0.000 with significance; the mean results for 11-14 lakh group (n=88, M=2.31, SD=0.93) are lesser than the mean values of above 15 lakh group, and mean differences = -0.794, *p*=0.000 with significance; Significant differences were not found in psychological well-being between other income-level groups of employees.

Years of dealing. One-way ANOVA (Bonferroni) results for psychological well-being scores reveal those levels of experience in all groups (1-3; 4-6; 7-9) are non-significant, except over 10 years of experience (n=57, M=2.245, SD=1.023), which is significantly lower than 4-6 years of experience with mean difference = 0.473, *p*= 0.010.

Results of Independent Sample T-test

To find the differences between groups of gender and marital status, the author conducted an independent sample T-test.

Table 7. Independent sample T-test

Variable	F value	Significance	t- value	Significance (2 tailed)	95% CI of the difference	
					Lower	Upper
Gender	32.179	.000	4.354	.000	.25199	.66699
Marital Status	1.119	.291	-.934	.351	-.29932	.10653

Gender. An independent samples t-test was performed to check the overall psychological well-being of both male and female groups. The results showed that Males (n=276) and Females (n=108) groups had significant differences in mean for overall values of psychological well-being (see Table 7). Both genders have significance at the 0.05 level, for Males (4.031±0.827) and Females (3.571±1.152), in that males have high scores. Results showed that male people can perceive higher psychological well-being than female groups.

Marital status. Results from the independent sample T-test for marital status [married (n=257); unmarried (n=257) revealed that there are no statistical differences between these two groups.

Discussion

Structural equation modeling (SEM) analyses reveal the positive impact of workplace resilience on employee engagement with psychological well-being as a partial mediator. A recent study

by Nagoji and Mackasare (2023) offers one of the most comprehensive empirical analyses of resilience in the workplace which states that enhancing employees' psychological well-being can significantly improve overall engagement. As per our results, industries aiming to boost engagement and productivity should focus on increasing workplace resilience which can promote employees' psychological well-being (Fulmer et al., 2003).

The research findings of the Analysis of Variance test show significant differences between the demographic groups and psychological well-being. Younger employees (2.172±0.868) tend to have lower psychological well-being and could benefit from the guidance of senior employees through mentoring and participation in employee assistance programs (Bouzikos et al., 2022). At the same time, senior employees (2.187±0.869), who report higher psychological well-being, could take on the role of mentors. There are no significant differences in psychological well-being based on educational qualification suggesting that professional development and a supportive work environment may be more important than formal education. Significant differences in income levels and job positions (2.23±1.00), (3.04±1.442) highlight the need for equitable policies including fair compensation. The higher psychological well-being reported by more experienced employees (2.245±1.023), underscores the value of recognizing experience and providing appropriate roles. Gender differences (high male and low female) in psychological well-being (4.031±0.827) suggest the necessity for gender-specific initiatives (Matud et al., 2019), such as support networks and flexible work arrangements, especially for female employees. Interestingly, the absence of significant differences related to marital status implies that well-being programs can be applied across global organizations. Therefore, IT companies should tailor their well-being programs to account for these demographic factors, creating a supportive work environment that can enhance psychological well-being and, employee engagement (Muñoz et al., 2022). These insights provide valuable guidance for forming robust and engaged workforces.

Implications of the study

This study contributes to academic literature in several ways. First, working in a stressful environment, especially after COVID-19 carries high job demands with limited job resources for employees (Vahdat, 2022). The original JD–R model was modified to test employee disengagement due to the negative effect of high job demands and limited job resources, as argued by Bakker et al. (2023). The findings of this study underscore the critical role that job resources, such as clear communication and organizational support, play in fostering employee engagement (Okojie et al., 2023) across various dimensions of dedication, vigor, and absorption within the context of IT employees. Building upon the Job Demands-Resources (JD-R) model, this research strongly recommended that adequate job resources help employees manage job demands more effectively and contribute to heightened engagement levels. These insights align with existing literature, suggesting that providing sufficient resources is vital in mitigating burnout and enhancing employee performance (Minh et al., 2023). Offering counseling programs may result in fostering employee well-being, and would support their work environment since they find themselves more resilient. A supportive work environment can build workplace resilience, initiating a positive feedback loop where employees, feeling valued, are motivated to engage more deeply in their roles (Cabrera-Aguilar et al., 2023). It not only benefits employees but also supports organizational sustainability and growth. Overall, the results confirmed JD–R theory to a great extent (Schaufeli, 2017) and supported previous studies that found job resources to have positive effects on work engagement (Cai et al., 2024) and well-being to have positive effects on engagement (Wright & Cropanzano, 2000). From the Social Exchange Theory (SET) perspective, this study also emphasizes the significance of

organizational support in promoting employees' psychological well-being. Drawing on the work of (Zeijen et al., 2020), we propose that offering counseling services and fostering a supportive work environment can build workplace resilience, initiating a positive feedback loop where employees, feeling valued, are motivated to engage more deeply in their roles. This cycle of reciprocity not only benefits employees but also supports organizational sustainability and growth. Intriguingly, the results did not confirm a negative effect of job demands on work engagement.

Our findings suggest that IT companies should increase job resources, which are essential components related to work engagement and well-being, and optimize job demands, which have a negative effect on the well-being of IT employees. As the industry continues to be a pillar of national economies, organizations must implement strategic initiatives prioritizing employee well-being, resilience, and engagement. By investing in resources that enhance psychological well-being and resilience, companies can expect improved employee performance, including higher quality output, better problem-solving capabilities, and timely completion of the project. In conclusion, strengthening workplace resilience and psychological well-being is not only an investment in the wellness of employees but a key driver for overall organizational performance. Therefore, leaders and HR professionals must consider these factors as integral components of their strategy to foster a motivated, engaged, and high-performing workforce. The most valuable and purposeful contribution of this study is the proposed model that is extensive and feasible for improving the work engagement and well-being of IT employees. At this organizational level, industries can create foundations for continuous work engagement and the well-being of their employees.

Limitations and directions for future research

Although this research sheds light on the linkage between psychological well-being, employee engagement, and workplace resilience, many questions still exist. To start with the limitations of this study are limited to IT employees; further studies might include other industries at different levels of organizations as well. Second, more studies need to be conducted on the other aspects of organizations like leadership and organizational culture which may affect employees' engagement in job performance. To better customization treatments, it is essential to understand how different leadership styles and cross-cultural settings might impact these aspects. Finally, for the benefit of future researchers, longitudinal studies are required to recognize how workplace resilience affects employee engagement in the long run, with a focus on the mediating role of psychological well-being, to determine whether these impacts are sustainable over time.

Conclusion

The present research focuses on IT professionals operating in highly competitive, high-pressure settings, this study investigates the relationship between workplace resilience and employee engagement, using psychological well-being as a mediator. The results highlight the significance of assessing and enhancing companies that neglect to develop workplace resilience and may experience higher turnover rates, reduced efficiency, and a subsequent decline in employee loyalty and organizational value. The long-term consequences of poor employee engagement can hinder overall organizational success. Moreover, the result shows that employees' psychological well-being varied by age group, position, income level, and gender. Thus, organizations must implement robust workplace resilience policies and practices to enhance employee psychological well-being ultimately leading to employee engagement. By focusing on these aspects, IT industries can create a workplace that boosts resilience, well-

being, and engagement, driving overall organizational success that sustains economic contributions.

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Data availability
The data supporting this study's findings are available from the corresponding author upon reasonable request.

Conflict of interest
The author declares no potential conflict of interest in this manuscript.

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