



Unpacking the role of job satisfaction in the psychological capital-work engagement link: evidence from ugandan public universities

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Abstract

The purpose of this study was to explore how job satisfaction acts as a mediator in the relationship between work engagement and psychological capital. The research adopted a cross-sectional design to gather data from teaching staff at public universities in Uganda, using self-report questionnaires. A total of 270 responses were analysed through structural equation modelling to test the proposed relationships. The results indicate that psychological capital directly influences both job satisfaction and work engagement. Additionally, job satisfaction mediates the relationship between psychological capital and work engagement. These findings may assist management and policymakers in designing, adopting, and implementing strategies to enhance psychological capital, such as flexible work programmes, to boost work engagement. This research contributes to the literature on work engagement by identifying job satisfaction as an additional mediator between psychological capital and work engagement.

Keywords Psychological capital · Job satisfaction · Work engagement · Ugandan public universities

Introduction

As universities worldwide face increasing demands for quality, accountability, and innovation, understanding what motivates academic staff engagement has become more urgent than ever (Carrell and Kurlaender 2023). Work engagement (*WE*) is

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defined as a positive, fulfilling, and work-related mental state characterised by vigour, dedication, and absorption (Schaufeli et al. 2002). *WE* is a crucial aspect of organisational psychology, linked to key organisational outcomes such as higher performance, job satisfaction, innovation, and reduced turnover (Bakker and Demerouti, 2008). In higher education, *WE* improves teaching effectiveness, research productivity, and student outcomes, making understanding its drivers essential for universities (Carrell and Kurlaender 2023; Gallup 2024).

Despite the increasing global focus on *WE*, much of the existing research remains heavily concentrated in Western settings, with limited attention to African institutional contexts, especially within Uganda's public universities (Antwi 2023; Mugizi et al 2020). This geographical imbalance has created a gap in understanding how *WE* appears in developing countries, where contextual challenges differ significantly from those in the Global North. In Uganda, academic staff in public universities often work under conditions characterised by high workloads, limited institutional resources, and few opportunities for professional development. These ongoing challenges are frequently cited as key reasons for the reduced levels of *WE* among university teaching staff (BMAU 2018; Kasule and Neema 2014). Academic achievement, employee retention, and the general standard of higher education are all at risk due to this disengagement.

While structural and resource-based limitations have received some attention in the literature, there is limited empirical research into the psychological factors that may mitigate the negative impacts of such constraints. Notably, the role of Psychological Capital (*PsyCap*), a construct comprising self-efficacy, hope, resilience, and optimism (Luthans et al. 2007; Youssef-Morgan and Luthans 2013), remains underexplored within the Ugandan academic context. In other regions, *PsyCap* has been shown to positively influence *WE*, adaptability, and performance, particularly in environments with limited resources (Huang et al. 2023; Rashid et al. 2024)).

Also, literature has consistently highlighted the influential role of psychological capital (*PsyCap*) in improving *WE* across various sectors, including not-for-profit organisations (Abukhalifa et al. 2023; Thokoa et al. 2021). However, little is known about its operation in Uganda's higher education sector, where job resources, a key motivational factor, are frequently scarce. Furthermore, the mediating role of *JobSat* between *PsyCap* and *WE* remains underexplored, especially in Uganda's higher education system, although it is well recognised as a crucial motivating element and a potential mediator in organisational behaviour research (Siregar et al. 2024; Saks 2006).

This study addresses these gaps by examining the relationship between *PsyCap* and *WE* among academic staff in Uganda's public universities. By focusing on an underrepresented context and integrating psychological perspectives into organisational analysis, the study aims to contribute to a more nuanced understanding of how *WE* can be sustained in higher education institutions facing systemic challenges. It also explores how *JobSat* acts as a mediator in the relationship between *PsyCap* and *WE* among academic staff at public universities in Uganda. By adopting the Job Demands-Resources (JD-R) and Conservation of Resources (COR) theories, it enhances our understanding of how to utilise psychological resources within oneself to boost participation in resource-limited academic settings.

The structure of this paper is organised as follows: it begins with a concise review of the theoretical framework and the formulation of hypotheses. This is followed by a presentation of the research materials and methodology. Subsequently, the methods of data analysis and key findings are examined. The paper concludes with a discussion of the results, highlighting their significance and implications.

Theoretical background and hypothesis development

This study applies the JD-R model (Bakker and De Vries 2021) and COR theory (Hobfoll et al. 2018) to address a theoretical gap by examining how *PsyCap* influences *JobSat* and, in turn, *WE* among teaching staff in Uganda's public universities.

The JD-R model proposes that all job characteristics can be classified into two broad categories: job demands and job resources. According to the model, *WE* arises when employees have sufficient job resources to effectively cope with or meet the demands of their job (Bakker and Demerouti 2017; Ho 2025). This model indicates that personal resources like *PsyCap*, which includes self-efficacy, optimism, hope, and resilience, serve as key motivational drivers that boost workers' engagement when job demands are high and organisational support is limited. In relation to the mediation process, and specifically to this study, the JD-R model contends that *JobSat* is conceptualised as a motivational resource that mediates the link between *PsyCap* and *WE*, allowing staff to stay emotionally and cognitively committed to their work. *PsyCap* functions as a personal resource that enhances individuals' capacity to mobilise and utilise job resources effectively.

Personal resources are conceptualised as positive self-evaluations that foster resilience and denote an individual's perceived capability to effectively control and influence their environment (Granziera 2022). For example, teaching staff possessing high personal resources specifically hope demonstrates this by believing they can secure a competitive research grant; should an initial funding application fail, they immediately pivot to strategising alternative funding sources or collaborating with new partners. Job resources, by contrast, encompass the physical, psychological, social, or organisational facets of a role designed to facilitate the achievement of work goals, mitigate job demands, and stimulate personal growth and development (Demerouti et al. 2001). Within a public university context, critical job resources include a supportive departmental head who shields teaching staff from unreasonable administrative demands and collegial teaching teams that practice resource sharing, such as course materials and workload distribution.

JobSat emerges as both an outcome of effective resource utilisation and a resource itself that contributes to *WE*. Workers with higher *PsyCap* are better equipped to derive satisfaction from their work experiences, and this satisfaction provides the motivational foundation for sustained engagement (Díaz-Fúnez et al. 2024; Rosita et al. 2024). The model's emphasis on resource dynamics aligns with the proposed mediation mechanism, suggesting that *JobSat* represents a proximal outcome of *PsyCap* that subsequently influences the more complex motivational state of *WE*.

Acting in tandem with the JD-R model, the COR theory proposes that individuals aim to acquire, maintain, and protect valuable psychological resources, and that resource gains (such as increased *JobSat*) can lead to positive spirals resulting in

improved well-being and performance (Hobfoll et al. 2018). *PsyCap* represents a valuable personal resource that can be leveraged to enhance *JobSat*, which in turn provides additional psychological resources that facilitate *WE*. Together, these frameworks (the JD-R and COR) provide a robust foundation for understanding how internal psychological strengths translate into meaningful engagement in resource-constrained academic environments.

Hypothesis development

Psychological capital and work engagement

The intersection of *PsyCap* and *WE* has become a vital focus in positive organisational behaviour and occupational health psychology. *PsyCap* is a higher-order psychological resource seen as an individual's positive psychological state of development, characterised by self-efficacy, hope, optimism, and resilience (Luthans et al. 2007). It has gained significant attention as a predictor of various work-related outcomes (Avey et al. 2011; Foster et al. 2019; George et al. 2023). At the same time, *WE*, defined as a positive and fulfilling work-related state of mind characterised by vigour, dedication, and absorption (Schaufeli et al. 2002), has been recognised as a key indicator of employee well-being and organisational effectiveness. Individuals high in *PsyCap* believe in their ability to handle and invest effort into difficult tasks (efficacy), maintain goal-focused persistence (hope), anticipate favourable outcomes (optimism), and recover from adversity (resilience) (Fakilar 2022). Recent meta-analytic research has reinforced the idea of *PsyCap* as being state-like rather than purely trait-based, since intervention studies have shown that hope and optimism can be significantly improved, and these improvements tend to persist beyond the immediate post-intervention period (Loghman et al. 2025).

The JD-R theory posits that personal resources such as *PsyCap* are crucial drivers of *WE* (Bakker et al. 2023). These resources enable employees to meet job demands more effectively, perceive challenges as opportunities rather than threats, and invest more energy into tasks, leading to greater vigour, dedication, and absorption. The COR theory (Hobfoll et al. 2018) complements this by suggesting that resources cluster: having more resources (such as *PsyCap*) helps individuals acquire yet more resources (e.g., job support, autonomy), triggering resource-gain spirals that underpin sustained engagement.

Recent empirical longitudinal research confirms these theoretical expectations. For example, a study of 661 employees over three monthly waves found reciprocal gain cycles among job resources, *PsyCap* and *WE*. Specifically, higher *PsyCap* predicted increases in *WE*, which then predicted growth in *PsyCap* and additional job resources (Kuhlmann and Süß, 2024). Additionally, the proximal effects of *PsyCap* have been observed in several studies. For instance, Biswal et al. (2025) found that *PsyCap* significantly predicts *WE* in both the public and private sectors in India. Notably, social relationships moderate this relationship; the effect of *PsyCap* on *WE* is stronger when employees report high-quality social relationships at work. Furthermore, Widiyanto and Wilderom (2023), in a two-wave longitudinal study of Indonesian healthcare workers, demonstrated that transformational leadership influenced

increases in *PsyCap*, which in turn led to higher job performance and *WE*. While lagged effects for *WE* were somewhat less robust than for performance, the findings support *PsyCap* as a mediator between leadership and engagement. Similarly, among nurses in Iraqi public hospitals, *PsyCap* influenced innovative work behaviour via *WE*. Transformational leadership also moderated the *PsyCap-WE-IWB* pathway; under strong transformational leadership, the effect of *PsyCap* on *IWB* via *WE* was amplified (Alwali 2024).

Another critical empirical insight comes from the meta-analysis of the *PsyCap* nomological network (Loghman et al. 2022). This study analysed over 250 independent samples (nearly 96,000 participants) and confirmed that across cultures, industries, and study designs, the correlation between *PsyCap* and *WE* was strong and positive.

Drawing from these theoretical and empirical developments, particularly in contexts similar to academic institutions, the following hypothesis is proposed for the current study among public university academic staff:

H₁: *Psychological capital explains a significant proportion of variance in work engagement.*

Psychological capital and job satisfaction

In contemporary organisational scholarship, *PsyCap* has emerged as a crucial personal resource that contributes to enhancing positive employee attitudes and outcomes, particularly *JobSat*. As a higher-order construct, *PsyCap* consist of four psychological capacities: hope, efficacy, resilience, and optimism collectively known as the HERO model (Luthans et al. 2007). Each of these dimensions enables workers to interpret challenges as manageable, reframe adversity constructively, and persist toward valued goals, ultimately fostering a more positive appraisal of their work environment (Fakilar 2022; Erden 2025).

The relationship between *PsyCap* and *JobSat* is rooted in two main frameworks in organisational psychology. First, the JD-R model (Bakker and Demerouti 2007) views *PsyCap* as a personal resource that boosts motivation. *PsyCap* reduces job demands, improves employees' perceived ability to handle work stressors, and increases the benefits gained from job resources, thereby raising satisfaction levels (Xanthopoulou et al. 2009). Second, the COR theory (Hobfoll 2018) suggests that individuals aim to acquire, protect, and grow valuable resources. *PsyCap* acts as a fundamental resource, supporting gain spirals whereby resourceful individuals not only sustain satisfaction but also progress towards flourishing through cumulative personal and contextual gains (Demerouti et al. 2001).

A growing body of empirical evidence across diverse sectors and cultures underscores the positive link between *PsyCap* and *JobSat* (cf. Ashraf and Siddiqui 2020; Guan et al. 2017; Ngo 2021). For instance, Kariri et al. (2023) demonstrated a significant relationship among Saudi Arabian civil servants and private sector employees, where *PsyCap* enhanced *JobSat* both directly and indirectly via personal social responsibility. Similarly, Alutaya and Guhao (2024) found that among public school teachers in the Philippines, *PsyCap* elements, particularly optimism and hope, predicted higher levels of intrinsic and extrinsic *JobSat*.

Recent research by Liu et al.,(2024) in China's healthcare sector further supports the generalisability of this relationship, revealing that nurses with high *PsyCap* reported better *JobSat* and lower emotional exhaustion. A parallel study among Turkish banking employees by Erden (2025) also confirmed the predictive validity of *PsyCap* on *JobSat*, with self-efficacy emerging as the strongest dimension.

Meta-analytic findings lend further weight to these conclusions. In a large-scale review involving over 200 independent samples and over 96,000 participants, Loghman et al. (2022) confirmed a strong positive relationship between *PsyCap* and *JobSat*. They also found that the strength of this relationship is moderated by factors such as industry type (service vs. manufacturing), country of sample origin, and study design (cross-sectional vs. longitudinal).

Despite the growing consensus on the positive *PsyCap*-*JobSat* relationship, several critical issues merit attention, particularly within the higher education sector in sub-Saharan Africa. First, most existing studies are drawn from high or middle-income countries with relatively robust institutional support systems (e.g., China, Turkey) (Aydın and Gümüşboğa 2023; Hazan-Liran 2024). There remains a conspicuous gap in empirical studies examining this relationship in under-resourced academic environments, such as Ugandan public universities, where stressors like large student-to-faculty ratios, limited research funding, and low remuneration are endemic (Bagonza and Kaahwa 2024).

Lastly, while *PsyCap* is often treated as a stable, unidimensional construct, recent studies suggest its subcomponents may differentially affect *JobSat*. For example, Yao et al. (2024) found that hope and optimism significantly predicted satisfaction among the teaching staff in universities, while resilience was more closely associated with retention and reduced burnout. This suggests the need for more nuanced, component-level analyses like this one.

In the context of Ugandan public universities, where the teaching staff face persistent systemic and resource-related challenges, *PsyCap* may serve as a cost-effective psychological lever for enhancing *JobSat*. Encouraging the development of psychological resources via mentorship, training, and leadership modelling could not only elevate academic morale but also positively influence teaching quality, research output, and institutional commitment. Moreover, given that teacher efficacy, retention, and morale are linked to *PsyCap* (Yao et al. 2024; Bagonza and Kaahwa 2024), fostering this construct may offer a viable strategy to improve staff outcomes in environments where structural reforms are slow or constrained by financial limitations. In light of the robust theoretical rationale and cumulative empirical evidence across global contexts, we propose the following hypothesis:

H₂: *Psychological capital is positively associated with job satisfaction among academic staff.*

Job satisfaction and work engagement

Organisational behaviour research consistently treats *JobSat* and *WE* as twin pillars of employee motivation, retention, and performance. While *JobSat* captures the attitudinal dimension of how favourably employees evaluate their job overall or in its facets (Spector 1997), *WE* reflects the motivational and affective dimension of being

energetically and cognitively immersed in work (Schaufeli and Bakker 2004). The precise nature of the *JobSat-WE* link remains contested: some scholars deconstruct *JobSat* into discrete facets (e.g. pay, supervision, working conditions) to examine how each domain predicts engagement differently (Spagnoli and Caetano 2012), whereas others advocate a global or composite measure of *JobSat*, arguing that the cumulative satisfaction across facets better aligns with engagement outcomes (Garg et al. 2018). Empirical decomposition analyses occasionally yield mixed patterns: for instance, in a UK bank, Yalabik et al. (2017) demonstrated that satisfaction with work, coworkers and supervisors positively predicted all *WE* dimensions, but satisfaction with operating conditions and communication negatively correlated with absorption, suggesting domain-level effects that are nonuniform. In contrast, the composite *JobSat* approach often reveals stronger, more stable correlations with engagement and other work outcomes (Harter et al. 2002; Boles et al. 2007). From the theoretical vantage of JD-R and COR theories, *JobSat* arguably functions as a resource or buffer: greater satisfaction signals that job demands are manageable and resources sufficient, thereby fostering vigour, dedication, and absorption. Indeed, studies in India's banking sector (Garg et al. 2018) found that managers with higher *JobSat* reported higher levels of *WE* attributed partly to intrinsic investments such as perceived autonomy, fair compensation, and decision latitude. Recent evidence further underscores this link: a survey of bank employees across European countries found that *JobSat* mediates the effect of remote work intensity on engagement, although remote work's net effect on engagement was negative (Ruželė et al. 2025). Moreover, among engineers in Egypt, Ibrahim and Hussein (2024) observed a moderate positive correlation between *JobSat* and *WE* ($r=0.396$, $p<0.05$), with *JobSat* emerging as a significant predictor of engagement even after controlling for resilience (which itself correlated strongly with *JobSat*, $r=0.608$). A longitudinal research by Chen et al., (2023) examined this relationship among educational professionals, establishing temporal precedence and prediction of *JobSat* on the entire three dimensions of *WE*: vigour, dedication, and absorption. The consistency across sectors, despite differing job demands, supports the hypothesis that *JobSat* exerts a robust influence on *WE* when measured globally. Nonetheless, gaps remain: most studies are cross-sectional, limiting causal inference; few adopt facet-level decompositions in higher education settings in developing countries; and mediators or moderators (e.g. leadership support, job autonomy, perceived organisational justice) are inconsistently included. Overall, the preponderance of theory and empirical evidence supports a positive, resource-based pathway from *JobSat* to *WE*, leading us to formulate:

H₃: *Job satisfaction is positively related to work engagement.*

The mediation role of job satisfaction

The contemporary workplace demands employees who are not only capable but also resilient, engaged, and satisfied with their work roles. *PsyCap* has emerged as a critical predictor of various workplace outcomes such as education. *PsyCap*, a higher-order construct encompassing self-efficacy, hope, optimism, and resilience, has emerged as a crucial personal resource that significantly enhances various positive work outcomes (Al-refaei et al. 2023; Olusoji et al. 2021). Conceptualised as

a malleable and developable psychological state, *PsyCap* empowers individuals to navigate complex work environments with confidence, perseverance, and a positive outlook. In resource-constrained or high-stress organisational contexts, such as those common in many higher education institutions, the development and strategic deployment of *PsyCap* becomes especially vital. Similarly, *WE* characterised vigour, dedication and absorption (Schaufeli et al. 2002) as a key indicator of employee well-being and organisational effectiveness.

A growing body of research has established a positive and direct relationship between *PsyCap* and *WE* (Paliga et al. 2022; Abukhalifa et al. 2022; Zhang et al. 2023). However, the mechanism through which this influence is exerted remains underexplored, with limited empirical inquiry into the potential mediators that account for this link. This oversight restricts the theoretical depth and practical utility of existing models. We argue that *JobSat* is a critical intermediary that explains *how* and *why* *PsyCap* contributes to greater engagement at work.

Theoretically, *PsyCap* provides employees with the cognitive and emotional tools needed to approach work challenges with confidence (self-efficacy), pursue goals with persistence (hope), maintain a positive explanatory style (optimism), and recover from adversity (resilience). These psychological strengths directly contribute to an enhanced sense of accomplishment and well-being in the workplace, which manifests as increased *JobSat* (Olusoji et al. 2021). In turn, satisfied employees are more likely to exhibit higher levels of *WE*, characterised by vigour, dedication, and absorption (Prayag et al. 2024; Paliga et al. 2022).

From a practical standpoint, *PsyCap*-driven *JobSat* can create a motivational foundation for sustained engagement (Marques et al. 2021). Employees with high *PsyCap* are better equipped to derive fulfilment from their roles, perceive their contributions as meaningful, and maintain a resilient commitment to organisational goals. This satisfaction not only reflects a positive evaluative judgement of one's job but also serves as an affective condition that fuels sustained cognitive and emotional investment in work tasks, hallmarks of engagement (Chen et al. 2024).

Critically, the mediating role of *JobSat* is not merely a statistical relic but a theoretically grounded pathway. Several empirical studies support the mediating function of *JobSat* in related contexts. For instance, Jameel (2024) and Siregar et al. (2024) have shown that *JobSat* significantly mediates the relationship between antecedents such as supervisor support or career growth and outcomes like retention or engagement or organisational commitment (Taşkıran et al. 2024). In the healthcare setting, Li et al. (2022) conducted a large-scale study of 1,247 nurses across multiple hospitals in China and found that *JobSat* significantly mediated the relationship between *PsyCap* and *WE* (indirect effect $\beta=0.34$, 95% CI [0.28, 0.41]). Similarly, the study by Mbah et al. (2024) extended this research by examining chain mediation effects, investigating how *PsyCap* influences job performance through problem-focused coping and job engagement. While not directly examining *JobSat*, their findings provide supporting evidence for the sequential mediation model, suggesting that positive psychological resources influence intermediate affective states that subsequently enhance engagement levels.

Within the educational sector, recent research in educational contexts has provided additional support for the mediation hypothesis. Wang and Liu (2023) examined 856

English teachers across primary and secondary schools, finding that *JobSat* partially mediated the relationship between *PsyCap* and *WE*. The mediation effect accounted for approximately 45% of the total effect of *PsyCap* and *WE*, indicating substantial practical significance. Furthermore, Jiang et al. (2025) conducted a comparative study between teachers in special education and standard education settings. Their findings revealed that while *JobSat* mediated the *PsyCap*-*WE* relationship in both groups, the mediation effect was stronger among special education teachers, suggesting that context-specific factors may moderate the strength of mediation effects.

Additional evidence of the mediation role of *JobSat* can be appreciated among a sample of platform, gig economy and construction industry workers. Zhou et al. (2024) investigated 562 platform workers across various digital platforms, revealing that *JobSat* mediated the relationship between *PsyCap* and *WE*, with the mediation effect moderated by job autonomy levels. When job autonomy was high, the indirect effect of *PsyCap* on *WE* through *JobSat* was significantly stronger ($\beta=0.28$) compared to low autonomy conditions ($\beta=0.15$).

Research by Ahmed et al. (2022) examined construction workers' safety behaviour, providing insights into the *PsyCap*-*JobSat*-*WE* pathway in high-risk occupational settings. While their primary focus was on safety outcomes, their structural equation model (SEM) revealed significant mediation effects of *JobSat* in the relationship between *PsyCap* and *WE*, with implications for both safety performance and general engagement levels. This suggests that *JobSat* operates as a motivational and emotional bridge between resource-related constructs and behavioural outcomes.

Applying this logic to *PsyCap* and *WE*, we propose that the development of *PsyCap* initiates a positive affective state (*JobSat*), which in turn activates and sustains engagement. This aligns with the COR theory (), which posits that individuals invest and build resources to cope with stress and achieve goals. *PsyCap*, as a personal resource, initiates a gain spiral that includes *JobSat* and culminates in *WE* (Hobfoll 2018).

Furthermore, within the JD-R model (Bakker and Demerouti 2007), *PsyCap* can be conceptualised as a personal resource that buffers job demands and fosters motivational processes. *JobSat*, in this model, serves as a proximal outcome of resource availability and a precursor to full engagement. Notably, in under-resourced or bureaucratic contexts like public universities in Uganda, where structural and motivational challenges abound, the sequential influence of *PsyCap*-*JobSat*-*WE* becomes particularly salient and actionable.

Overall, while prior research has consistently demonstrated a direct link between *PsyCap* and *WE*, a closer examination reveals that *JobSat* serves as a vital mediating mechanism. It transforms the psychological advantages of *PsyCap* into meaningful emotional and behavioural outcomes. This mediation model not only advances theoretical understanding but also offers practical implications for leadership in higher education: by investing in interventions that build *PsyCap*, such as resilience training, optimism-building, and self-efficacy workshops, institutions can indirectly but powerfully enhance both *JobSat* and *WE*. Therefore, based on both theoretical reasoning and empirical precedents, we hypothesise that:

H₄. *Job satisfaction mediates the relationship between psychological capital and work engagement.*

Materials and methods

Research design

To gain a more thorough understanding of *WE* among academic staff of Uganda's public universities at a snapshot, this study made use of a cross-sectional design and an explanatory research approach (Kuye and Akinwale 2021).

Participants and procedure

In quantitative research, the validity of findings is significantly influenced by the sampling strategy and the adequacy of the sample size. In the present study, the target population consisted of 3,357 teaching staff from the ten public universities in Uganda, categorised as professors, associate professors, senior lecturers, lecturers, and assistant lecturers (MoPS 2024). To ensure equal representation and reduce selection bias, a simple random sampling technique was employed, granting each academic staff member an equal probability of being selected for participation. This approach aligns with established best practices for probability sampling, which aim to ensure generalisability and reduce systematic error (Sharma 2017).

To determine the initial sample size, Yamane (1973) formula was applied. Yamane provides a widely accepted method for calculating sample sizes in finite populations, particularly when the researcher desires a specific level of precision and confidence. Using this formula, a representative sample of 358 participants was drawn. This sample size is statistically adequate for descriptive and inferential analysis, especially in large populations (Israel 1992; Yamane 1967). Using multiple sampling justifications, Yamane's formula for general representativeness and SEM power analysis for model estimation ensures methodological rigour and supports the internal and external validity of the findings.

Therefore, given the study's analytical approach, the sample size was further refined based on SEM requirements. SEM involves estimating complex relationships among observed and latent variables, and therefore requires a sufficiently large sample size to ensure stable and reliable parameter estimates (Kline 2016; Tenenhaus et al. 2025). To this end, the Soper (2025) *Electronic Sample Size Calculator* was used, as it estimates the necessary sample size based on a set of key SEM-specific parameters, including the number of observed and latent variables, anticipated effect size, significance level, and desired statistical power simultaneously. Table 1 shows the computations based on Soper (2025) based computations that ensured the robustness of the structural SEM analysis.

This calculation yielded a minimum recommended sample size of 163 participants to detect small effects with 50% power at a 5% significance level. The actual sample size of 358 respondents substantially exceeds this threshold, providing additional confidence in the robustness of the SEM analysis. While the conventional threshold for statistical power is 0.80 (Cohen 1988), exploratory or resource-constrained studies may reasonably employ lower thresholds. A power of 0.50 reflects a greater tolerance for Type II error, which is acceptable in preliminary or theory-generating research phases where the aim is to detect patterns rather than to confirm hypotheses

Table 1 Structural Equation Modelling (SEM) Sample Size Calculation and Adequacy Assessment

Parameter	Value
Number of observed variables	26
Number of latent variables	3
Anticipated effect size (λ)	0.20
Significance level (α)	0.05
Desired statistical power ($1 - \beta$)	0.50
Minimum sample size required	163
Actual sample size obtained	358
Satisfies SEM adequacy?	Yes
Satisfies representativeness?	Yes (see sampling strategy)

with high certainty (MacCallum et al. 1996). Moreover, as this study operates within practical constraints such as budget, accessibility of the target population, or time-frame, a 0.50 power was a defensible compromise in line with recommendations for exploratory SEM studies. Although the minimum sample size was estimated using a power threshold of 0.50, the actual sample of 358 participants exceeded the required 163 cases by more than double, yielding multiple methodological benefits. First, the larger sample substantially increases statistical power, likely approaching or surpassing 0.80, even for small-to-medium effect sizes (Moshagen and Bader 2024). Second, it enhances representativeness, as the sampling design ensured broad and proportional coverage of the target population, thereby strengthening the external validity and generalisability of the results (Buchberger et al. 2024). Thirdly, the expanded sample improves model estimation stability within the SEM framework by providing more precise parameter estimates, minimising convergence issues, and reducing standard error inflation (Piriyakul 2021). Finally, representativeness was supported by a stratified sampling approach across multiple universities, with diverse academic and administrative roles included. Data were collected through self-reported surveys distributed between 18th January and 22nd April, 2024.

Data screening before the SEM analysis

The study used SPSS v. 27 in the preliminary analysis of data screening. Before the main analyses, data were screened to ensure the assumptions of parametric tests were met, focusing on outliers, normality, and multicollinearity. Outliers were examined via boxplots, extreme cases were evaluated and retained or removed based on theoretical justification (see Fig. 1). Normality was assessed using the Kolmogorov–Smirnov test (Table 2) and visual inspection of histograms (Fig. 2) variables exhibited an acceptable bell-shaped curve. Table 3 presents the assessment of multicollinearity among the predictors, indicating no cause for concern. All Variance Inflation Factor (VIF) values were below 5, and all tolerance statistics exceeded 0.02, suggesting that each predictor shared less than 80% of its variance with the other variables. The combined reporting of VIF and tolerance provides a robust evaluation of multicollinearity, supporting the reliability and stability of the estimated regression coefficients (Hair et al. 2019; Field 2024; Tabachnick and Fidell 2019).

These screening steps confirmed that normality, outlier, and multicollinearity assumptions were adequately met, supporting the robustness of subsequent SEM estimations and inferences.

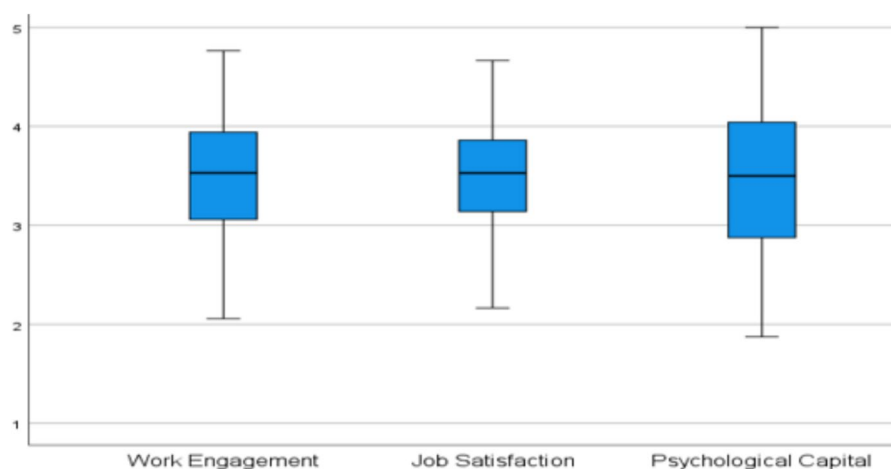


Fig. 1 Outlier Detection

Table 2 Normality Statistics

*. This is a lower bound of the true significance. a. Lilliefors Significance Correction

Source: Authors' own work

	Kolmogorov-Smirnov ^a		
	Statistic	df	Sig.
Work Engagement	.048	270	.200*
Job Satisfaction	.048	270	.200*
Psychological Capital	.048	270	.200*

Measures

The components of the study were measured using standard and validated techniques, with items anchored on a 5-point Likert scale that ranged from 1-strongly disagree to 5-strongly agree. However, literature-based items were altered to fit the study's setting.

Work engagement

The Utrecht Work Engagement Scale (UWES) was used to assess the work engagement of the teaching staff. This scale consists of 17 items mapped on three factors (vigour, dedication and absorption) (Schaufeli and Bakker 2003). Examples of the items are as follows: vigour ('*At my work, I feel bursting with energy,*' was modified to read, '*When I'm teaching or engaging with students at my university, I feel bursting with energy.*'); absorption ('*I find the work that I do full of meaning and purpose,*' was modified to read, '*Working as a teaching staff member in a Ugandan public university provides me with a deep sense of meaning and purpose.*'); and dedication ('*Time flies when I am working,*' was modified to read, '*Time flies when I am preparing lectures or engaging with students at the university.*')

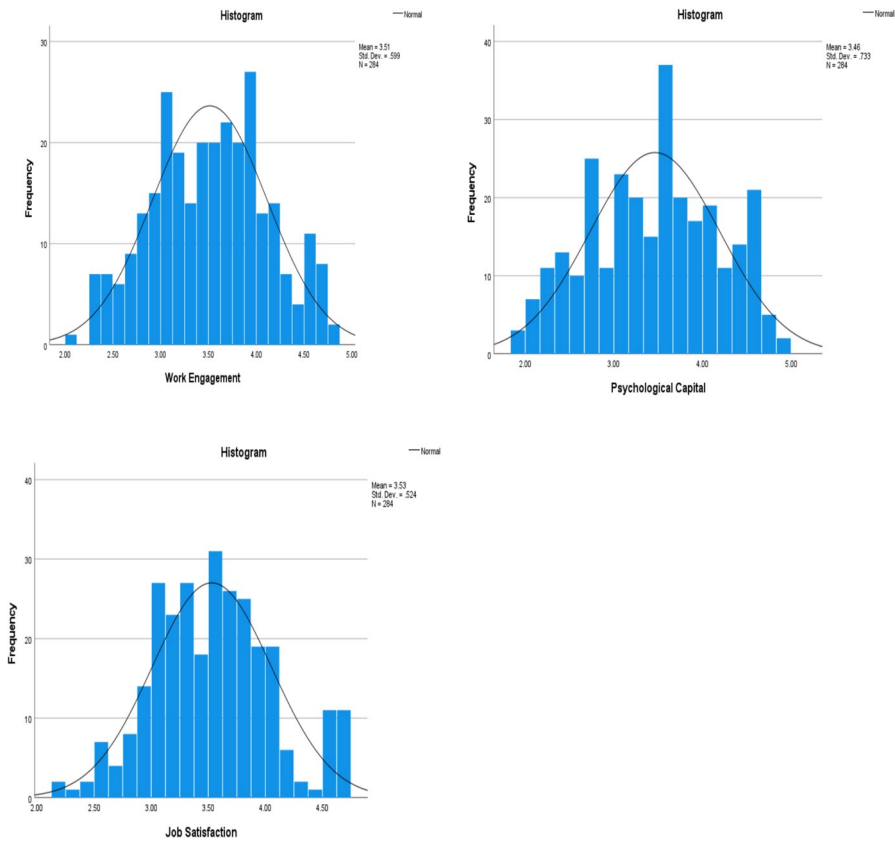


Fig. 2 Normality Histograms of the Study Variables

Table 3 Assessment of Multi-collinearity using the Collinearity Statistics

Model	Variables	Collinearity Statistics	
		Tolerance	VIF
1	Psychological Capital	.886	1.129
	Job Satisfaction	.872	1.147

Dependent Variable: Work Engagement

Source: Authors' own work

Psychological capital

PsyCap was measured using a 4-factor scale comprising 24 items (Luthans et al. 2007). Examples of the items included: hope (*'At present, I am energetically pursuing my work goals'*, was modified to read, *'Currently, I am energetically working towards my academic and professional goals at the public university.'*); self-efficacy (*'I feel confident in analysing a long-term problem to find a solution'*, was modified to read, *'I am confident in analysing persistent issues in my teaching or research environment to develop practical solutions'*); resilience (*'I usually manage difficul-*

ties one way or another at work', was modified to read, 'I usually find ways to overcome challenges that arise in my teaching and research duties at the university.');

and optimism ('I am optimistic about what will happen to me in the future as it pertains to work', was modified to read, 'I am optimistic about my future career growth and opportunities within Uganda's public university system.').

Job satisfaction

The 35-item, five-factor *JobSat* instrument was developed by integrating validated scales from existing literature to comprehensively capture key dimensions relevant to the higher education sector. Items reflecting *Communication* were adapted from Anh et al. (2020) to assess interpersonal and organisational information exchange critical to academic environments. The *Autonomy* and *Teacher-Student Relationship* dimensions were incorporated based on Mori et al. (2022), emphasising the importance of independent work and relational dynamics pivotal to educators' *JobSat*. Additionally, *Workload* and *Promotion* factors were derived from Al-Rubaish et al 2011, addressing workload management and career advancement, which are significant contributors to *JobSat* across professional contexts. This integrative approach ensures content validity by aligning the instrument with sector-specific factors and established theoretical constructs, thereby providing a robust measure tailored to the higher education setting.

Examples of the items are as follows: *Communication* ('The policies, rules and other regulations are well communicated', was modified to read, 'At my public university, policies and regulations are effectively communicated to lecturers and academic staff'); *Autonomy* ('I can adjust my working hours if necessary', was modified to read, 'I adjust my teaching and research hours if necessary to meet university demands.');

Teacher-Student relationship ('My students are satisfied with the teaching services that I provide', was modified to read, 'My students are satisfied with the educational experience and support I deliver as a university lecturer.');

Workload ('My required workload reduces the quality of performance, was modified to read, 'The workload I am required to handle at the public university sometimes affects the quality of my teaching and research performance.');

and *Promotion* ('My present job provides good opportunities for promotion', was modified to read, 'My current position at the public university offers promising opportunities for career advancement and promotion.').

Subscale scores were computed as the mean of all items within each factor, ensuring internal consistency within each domain. An overall *JobSat* score was derived as the mean of the five subscale scores to provide a composite measure of general *JobSat*. The *JobSat* reliability analyses displayed in Table 4 demonstrated satisfactory to excellent internal consistency across all factors, as summarised below:

These coefficients indicate robust internal reliability for each factor and for the composite scale, consistent with values reported in prior validation studies of the instrument.

Overall, the *PsyCap*, *WE*, and *JobSat* scales, as shown in Table 5 below, present reliability statistics (internal consistency) assessed with Cronbach's alpha (α) and McDonald's omega (ω) coefficients. The *PsyCap* subscale demonstrated excellent

Table 4 Specific Reliability Statistics for the *JobSat* Sub Scales

<i>JobSat</i> Factor	No. of Items	Cronbach's α	McDonald's ω	95% CI (α)
Communication	10	.76	.77	(.73,.81)
Autonomy	7	.70	.71	(.66,.76)
Teacher–Student Relationship	5	.62	.62	(.56,.70)
Workload	4	.57	.59	(.50,.67)
Promotion	9	.76	.76	(.71,.80)
Overall <i>JobSat</i> Scale	35	.88	.88	(.85,.90)

Table 5 General Reliability Statistics for *PsyCap*, *WE*, and *JobSat* Scales

Scale	Statistic	Point Estimate	95% CI Lower	95% CI Upper
PsyCap Sub Scale	McDonald's ω	0.909	0.893	0.924
	Cronbach's α	0.907	0.890	0.922
WE Sub Scale	McDonald's ω	0.781	0.743	0.819
	Cronbach's α	0.781	0.740	0.816
JobSat Sub Scale	McDonald's ω	0.875	0.853	0.896
	Cronbach's α	0.875	0.852	0.895
Overall Scale	McDonald's ω	0.785	0.738	0.659
	Cronbach's α	0.712	0.832	0.759

reliability, with $\alpha=0.91$ (95% CI [0.89, 0.92]) and $\omega=0.91$ (95% CI [0.89, 0.92]). The *WE* subscale showed acceptable reliability, $\alpha=0.78$ (95% CI [0.74, 0.82]) and $\omega=0.78$ (95% CI [0.74, 0.82]). The *JobSat* subscale also exhibited strong reliability, $\alpha=0.88$ (95% CI [0.85, 0.90]) and $\omega=0.88$ (95% CI [0.85, 0.90]). For the overall scale, internal consistency was lower but still within an acceptable range, with $\alpha=0.71$ (95% CI [0.66, 0.83]) and $\omega=0.79$ (95% CI [0.74, 0.83]). These results indicate that the individual subscales demonstrate good to excellent reliability, while the overall scale shows moderate internal consistency.

Statistical analysis and results

Common methods bias (CMB)

Given the use of self-reported survey data, CMB was assessed to ensure that the observed relationships were not artificially inflated by shared method variance (Breaugh 2008). The study employed a two-pronged approach, combining the traditional Harman's single-factor test with a Common Latent Factor (CLF)/marker variable method for a more rigorous evaluation.

First, Harman's single-factor test was conducted through exploratory factor analysis, where all items from the study constructs *JobSat*, *PsyCap*, and *WE* were loaded onto a single unrotated factor. The analysis revealed that the largest factor accounted for 11,93% of the total variance, well below the commonly cited 50% threshold (Podsakoff et al. 2003; Fuller et al. 2016), indicating that a single factor did not dominate the measurement model.

Since Harman's single-factor test is limited in sensitivity (Tehseen et al. 2017), we further controlled for potential method variance using a CLF approach implemented in AMOS. In this approach, a latent factor representing shared method variance was added to the measurement model, with all indicators loading onto both their theoretical construct and the CLF. Comparisons of standardised factor loadings between the models with and without the CLF showed no substantial changes (differences < 0.02), suggesting that method bias did not significantly influence the observed relationships (Williams et al. 1989). Additionally, a marker variable, an unrelated construct theoretically orthogonal to the primary study variables, was included to capture potential common method variance. The partial correlations controlling for the marker variable were largely unchanged, further confirming that CMB was not a concern.

Collectively, the results from both Harman's single-factor test and the CLF/marker variable procedures provide strong evidence that CMB did not substantively bias the study's findings, supporting the validity of the structural and mediation analyses.

Descriptive statistics and correlation analysis

SPSS v. 27 was used to provide an overview of the data and explore the initial relationships between the study variables. Table 6 presents the descriptive statistics (mean and standard deviation) and zero-order Pearson correlation coefficients among *WE*, *PsyCap*, and *JobSat* latent constructs.

The results indicate that academic staff in the sample reported relatively high levels of *WE* ($M = 4.08$, $SD = 0.43$) and *PsyCap* ($M = 3.80$, $SD = 0.57$), with moderate levels of *JobSat* ($M = 0.50$, $SD = 0.29$). These findings suggest that, on average, respondents are moderately engaged in their work and possess reasonably high levels of psychological resources such as optimism, resilience, self-efficacy, and hope.

Correlation results further show that *PsyCap* is positively and significantly related to *WE* ($r = 0.674$, $p < 0.01$), suggesting that individuals with higher *PsyCap* are more likely to be engaged in their academic roles. Similarly, *JobSat* is positively correlated with both *WE* ($r = 0.384$, $p < 0.01$) and *PsyCap* ($r = 0.337$, $p < 0.01$), although these correlations are moderate in strength. These initial findings provide support for the hypothesised relationships and highlight the potential role of *PsyCap* in enhancing both engagement and satisfaction among academic staff.

The data for the main analysis were analysed using a covariance-based SEM (CB-SEM) technique (Byrne 2016) in IBM AMOS v. 24. Testing focused on the fit indices of the research model, followed by the establishment of the internal consistency and validity of the constructs. Structural model and hypothesis testing was conducted, and finally, mediation testing.

The CB-SEM was selected due to its capacity to simultaneously estimate measurement and structural models while accounting for measurement error, providing

Table 6 Descriptive Statistics and Zero-Order Correlation

** $p < 0.01$ (1-tailed); $N = 270$

Source: Authors' own work

	Mean	SD	1	2	3
Work Engagement (1)	4.08	.43	1		
Psychological Capital (2)	3.8	.57	.674**	1	
Job Satisfaction (3)	.50	.29	.384**	.337**	1

robust and unbiased estimates of direct and indirect effects in complex models (Hair et al. 2025; Gaskin et al. 2025). The hypothesised model posited direct effects of *WE* and *PsyCap* on *JobSat*.

The analysis followed a two-step procedure recommended by Anderson and Gerbing (1988). In the first step, the measurement model was evaluated to ensure construct validity and reliability. Confirmatory factor analysis (CFA) was conducted for each construct, and the model fit was assessed using multiple fit indices, including Tucker-Lewis index (TLI), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), normed fit index (NFI), comparative fit index (CFI), χ^2/df , and RMSEA (Hair et al. 2021). The optimal range for TLI, CFI, GFI, and AGFI for measurement models is 0–1, with values > 0.9 indicating better data fit (Hair et al. 2019; Kline 2016; Khademi et al. 2023).

Moreover, a non-significant p value and an RMSEA value of 0.08 or below validated the above results. Factor loadings, composite reliability, and average variance extracted (AVE) were examined to confirm convergent validity, while discriminant validity was assessed using the Fornell-Larcker criterion and heterotrait-monotrait ratio of correlations method (HTMT) (Cheung et al. 2024).

Measurement and structural model results

The measurement models

Before testing the proposed hypotheses, CFA was conducted to assess the unidimensionality and psychometric robustness of the study's measurement models: *PsyCap*, *JobSat*, and *WE* (Bagozzi and Yi 1988; Afolabi and Konold 2024). Construct indicators were selected based on prior empirical research (Fornell and Larcker 1981; Hair et al. 2022), and the evaluation process involved assessing reliability and validity assessments.

The measurement models for *WE*, *PsyCap*, and *JobSat* (see Figs. 3, 4 and 5 below) and Table 7 demonstrated excellent fit (Hu and Bentler 1999; Schermelleh-Engel et al. 2003) with IFI, TLI, NFI, GFI, AGFI, CFI and TLI exceeding 0.90, RMSEA $\leq$ 0.08, and the p value > 0.05, indicating that the observed indicators adequately represented their respective constructs (Hair et al. 2019; Kline 2016). These results support the construct validity of *WE*, *PsyCap*, and *JobSat* in the proposed model.

Reliability and validity

Internal consistency reliability was assessed using Cronbach's alpha (α) and the McDonald's Omega (ω) Composite Reliability. McDonald's Omega (ω) approach was additionally used because it provides a more robust measure of reliability than Cronbach's alpha (Dunn et al. 2014; Kalkbrenner 2024). As shown in Table 8, all ω values exceeded 0.70 (ranging from 0.70 to 0.94), and α (ranging from 0.76 to 0.88) (Albayrak et al. 2020; Nunnally 1978). All standardised factor loadings were significant ($p < 0.001$) and > 0.50. Also, all the constructs achieved AVE values $\geq$ 0.50, confirming that the latent variables explained sufficient variance in their indicators (Fornell and Larcker 1981) jointly confirming convergent validity.

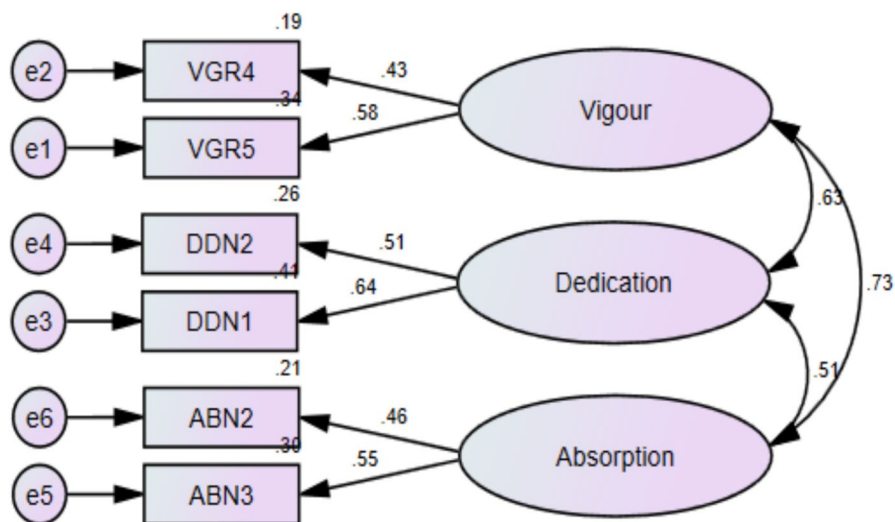


Fig. 3 Measurement Model for the *WE* Variable Model Fit Indices for the Work Engagement Measurement Model $\chi^2=2.948$, $df=6$, $p\text{-value}=.815$, $NFI=.977$, $IFI=1.025$, $TLI=1.069$, $CFI=1.000$, $GFI=.996$, $AGFI=.987$, $RMSEA=.000$; $CMIN/df=.491$

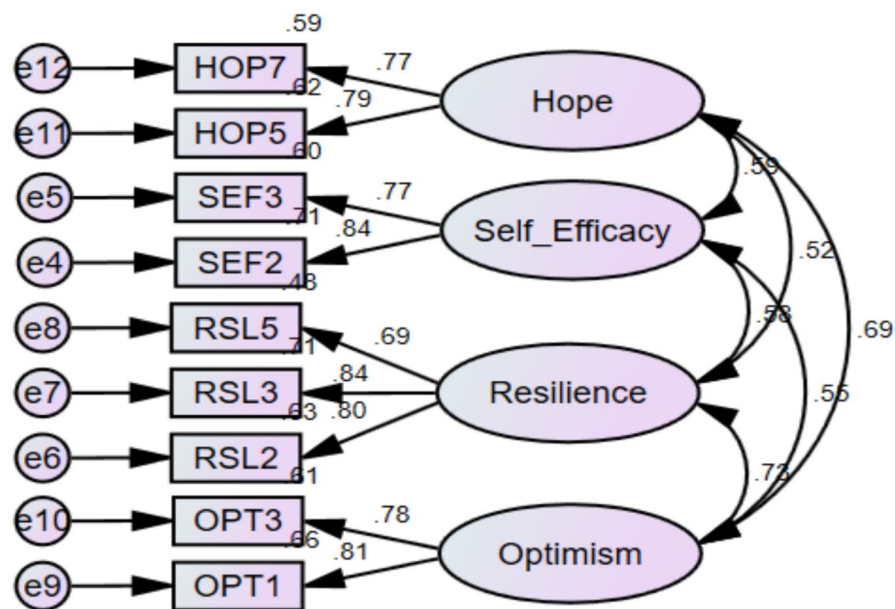


Fig. 4 Measurement Model for the *PsyCap* Variable Model Fit Indices for the Psychological Capital Measurement Model $\chi^2=28.165$, $df=21$, $p\text{-value}=.136$, $NFI=.973$, $IFI=.993$, $TLI=.988$, $CFI=.993$, $GFI=.978$, $AGFI=.953$, $RMSEA=.036$; $CMIN/df=1.341$

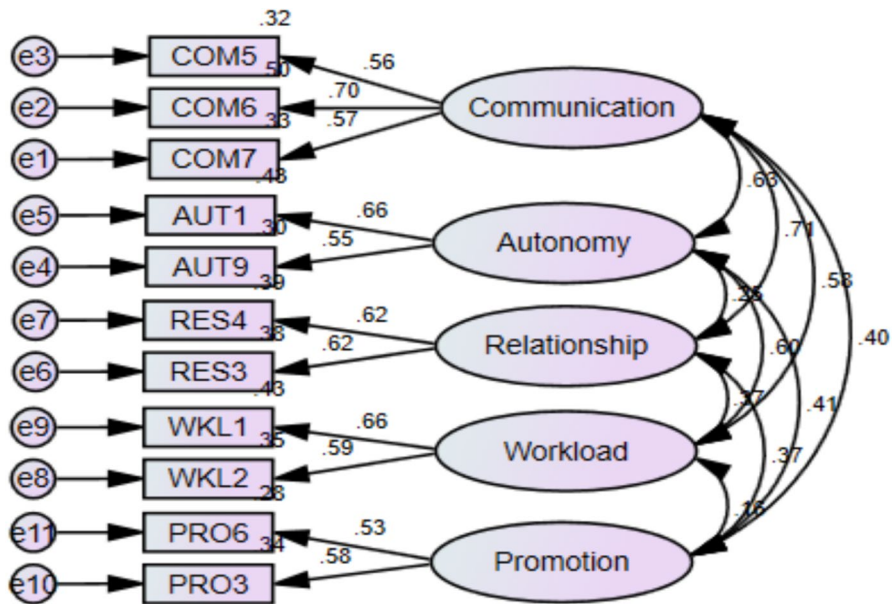


Fig. 5 Measurement Model for the *JobSat* Variable Model Fit Indices for *JobSat* Measurement Model $\chi^2=21.647$, $df=34$, $p\text{-value}=.950$, $NFI=.952$, $IFI=1.030$, $TLI=1.051$, $CFI=1.000$, $GFI=.985$, $AGFI=.972$, $RMSEA=.000$; $CMIN/df=.637$

Table 7 Study Variables' Model Fit Results

Models	χ^2	df	p	CFI	IFI	TLI	NFI	GFI	AGFI	RMSEA
Work Engagement	2.948	6	0.815	1.000	1.025	1.000	.977	.996	.987	0.000
Psychological Capital	28.165	21	0.136	.993	.993	.988	.973	.978	.953	0.036
Job Satisfaction	21.647	34	0.950	1.000	1.030	1.051	.952	.985	.972	0.000

Note(s) χ^2 - Chi-square; df- degrees of freedom; CFI- Confirmatory factor analysis; TLI- Tucker Lewis Index; NFI- Normed fit indices; and RMSEA- Root mean measure of approximation

Discriminant validity ensures that latent constructs represent distinct concepts. Discriminant validity was established through both the Fornell-Larcker criterion, where the square root of AVE for each construct exceeded its correlations with other constructs, and the HTMT ratio, with all values below 0.85 (Henseler et al. 2015). The HTMT was used because it addresses the low sensitivity of traditional methods when constructs seem to be conceptually similar or highly correlated (Henseler et al. 2015). It assesses the ratio of average correlations between constructs to those within constructs, with values below 0.85 (or 0.90 for conceptually related constructs) indicating adequate discriminant validity. Bootstrapped 95% confidence intervals (5,000 resamples) were generated, and discriminant validity was confirmed where the upper bound excluded 1.00. All HTMT values for *PsyCap*, *WE*, and *JobSat* were below 0.85, confirming that the constructs were empirically distinct and reinforcing the robustness of the measurement model for subsequent structural analyses.

Table 9 shows that HTMT values among the latent constructs were **0.103** (*WE*–*PsyCap*), **0.161** (*WE*–*JobSat*), and **0.327** (*PsyCap*–*JobSat*). All values were well

Table 8 Item Loadings, p -Values, α , ω , AVEs and $\sqrt{\text{AVEs}}$ of the Measurement Models

Variable	Code and Items	β	α	ω	AVE	$\sqrt{\text{AVE}}$
WE	VGR5: At my job, I am very resilient, mentally	.583***	.88	.73	.68	.82
	VGR4: I can continue working for very long periods at a time	.532***				
	DDN1: I find the work that I do full of meaning and purpose	.638***				
	DDN2: I am enthusiastic about my job	.509***				
	ABN3: I feel happy when I am working intensely	.550***				
	ABN2: When I am working, I forget everything else around me	.561***				
JobSat	COM7: In my university, I receive information about my progress in my job	.573***	.82	.85	.67	.82
	COM6: In my department, I always informed about changes in policies, rules and regulations, goals and events	.704***				
	COM5: In my department, there are regular scheduled meetings	.562***				
	AUT9: I have sufficient professional authority and autonomy at work	.548***				
	AUT1: I can adjust my working hours if necessary	.658***				
	RES3: I am inclined towards the improvement of the intellectual potential of my students	.616***				
	RES4: My teaching job is important and fulfilling	.624***				
	WKL2: My work does not make me stressed	.590***				
	WKL1: My required workload reduces the quality of performance	.658***				
	PRO3: Job promotion is based on job performance and achievement	.581***				
	PRO6: My job encourages competitive spirit	.528***				
PsyCap	SEF2: I feel confident contacting people outside this university (e.g., journal editors) to discuss problems	.845***	.76	.94	.62	.79
	SEF3: Although supervisor assigns me an extra job which I never had done it, I still believe in my ability that I can do it	.772***				
	RSL1: I usually manage difficulties one way or another at work	.796***				
	RSL4: Although too much responsibility at work makes me feel awkward, I can go through to work successfully	.843***				
	RSL5: I am undiscouraged and ready to face with difficulties at work	.691***				
	OPT1: I am optimistic about what will happen to me in the future as it pertains to work	.811***				
	OPT3: I believe that all the problems occurring at work always have a bright side	.783***				
	HOP5: When I set goals and plan to work, I concentrate to achieve the goal	.789***				
	HOP7: I am confident in my performance that I can work under pressure and challenging circumstances	.769***				

Source: Authors, 2025; *WE*=Work Engagement; *PsyCap*=Psychological Capital; α =Cronbach's alpha; ω =McDonald's Omega; AVE=Average Variance Explained; $\sqrt{\text{AVE}}$ =Square root of AVE

Table 9 Heterotrait-Monotrait ratio (HTMT)

Study Constructs	<i>WE</i>	<i>PsyCap</i>	<i>JobSat</i>
Work Engagement (<i>WE</i>)	1.000		
Psychological Capital (<i>PsyCap</i>)	0.103	1.000	
Job Satisfaction (<i>JobSat</i>)	0.161	0.327	1.000

Table 10 Findings of Model Comparison

Model	χ^2	d/f	<i>p</i>	CMIN/df	NFI	CFI	TLI	GFI	AGFI	RMSEA	SMC
Mediated Model	5.833	5	.323	1.167	.973	.996	.992	.992	.975	.025	.49
Non-Mediated Model	38.241	6	.000	6.373	.826	.846	.743	.950	.875	.141	.45

Note(s): RMSEA=Root mean square of approximation; SRMR=Standardized Root Mean Residual; TLI=Tucker- Lewis index; CFI=Comparative fit index; * $p < 0.05$; Source(s): Table by Authors

below the conservative threshold of 0.85, thereby providing strong evidence of discriminant validity. These results confirm that the three constructs are empirically distinct and do not exhibit problematic overlap. The low HTMT ratios also reinforce that *WE*, *PsyCap*, and *JobSat* represent conceptually different dimensions of employee experience, aligning with theoretical expectations that these constructs, while related, capture unique aspects of psychological and occupational functioning. These results confirm adequate convergent validity and internal consistency reliability (Fornell and Larcker 1981).

Together, these results demonstrate that all latent constructs are both reliable and empirically distinct.

Structural model and hypothesis testing

Following Gerbin and Anderson's (1988) structural model criterion, the structural model was subsequently estimated to examine hypothesised relationships. To test the proposed hypotheses and determine the best-fitting model for the data, two structural models were evaluated in line with Morgan and Hunt's (1994) recommendations: a mediated model (with *JobSat* as a mediator between *PsyCap* and *WE*) and a non-mediated model (excluding the mediation pathway). According to Morgan and Hunt (1994), model selection should be based on four key parameters: 1) overall model fit, 2) explanatory power (via Squared Multiple Correlations, the SMC), 3) proportion of significant hypothesised paths, and 4) model parsimony, as assessed by the Normed Fit Index (NFI).

As shown in Table 10 and illustrated in Figs. 6 and 7, the mediated model (Fig. 6) demonstrated a superior fit compared to the non-mediated version. Specifically, the mediated model yielded a high CFI of 0.996, NFI of 0.973, and a very low RMSEA of 0.025, all indicating excellent model fit. Furthermore, the SMC (the explanatory power of the structural model) for *WE* in this model was 49.4%, suggesting that nearly half of the variance in *WE* is explained by the combination of *PsyCap* and *JobSat*.

In contrast, the non-mediated model (Table 10 and Fig. 7), in which the direct path from *PsyCap* to *JobSat* was removed, showed significantly poorer fit indices, including a CFI of 0.846, NFI of 0.826, and a high RMSEA of 0.141. The explained variance (SMC) dropped to 45.0%, indicating reduced explanatory power. These sta-

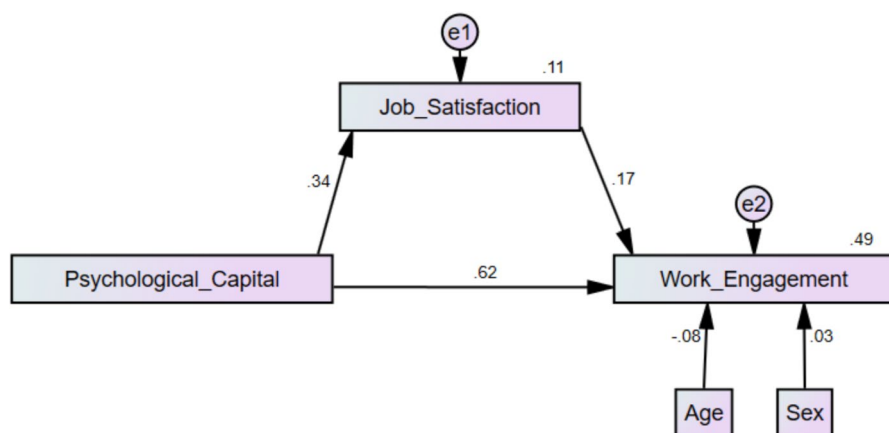


Fig. 6 Mediated Work Engagement Theoretical Model Model Fit Indices for Work Engagement Theoretical Model $\chi^2=5.833$, $df=5$, $p\text{-value}=.323$, $NFI=.973$, $IFI=.996$, $TLI=.992$, $CFI=.996$, $GFI=.992$, $AGFI=.975$, $RMSEA=.025$; $CMIN/df=1.167$

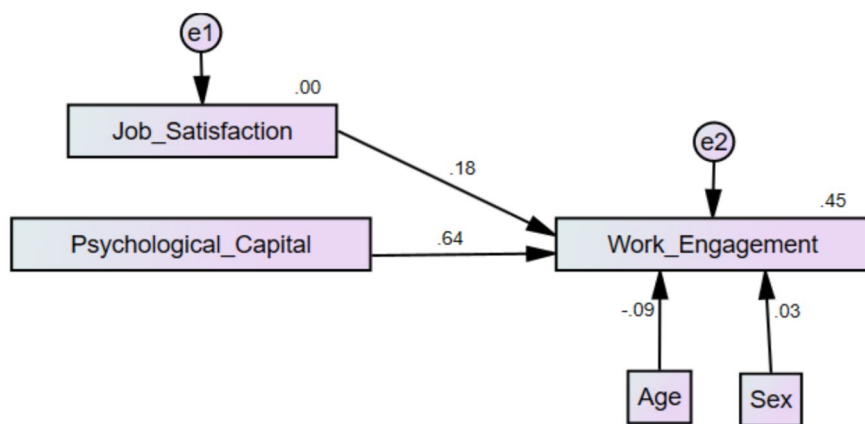


Fig. 7 Non-Mediated Work Engagement Theoretical Model Model Fit Indices for Non-Mediated Work Engagement Theoretical Model $\chi^2=38.241$, $df=6$, $p\text{-value}=.000$, $NFI=.826$, $IFI=.849$, $TLI=.743$, $CFI=.846$, $GFI=.950$, $AGFI=.875$, $RMSEA=.141$; $CMIN/df=6.373$

tistics, along with supplementary model comparison indicators, clearly support the superiority of the mediated model. Based on these results, and consistent with Morgan and Hunt's framework, the mediated model (Fig. 6) was retained for hypothesis testing.

The testing of the hypothesis hinged on the strength and significance of the hypothesised paths among the key variables: *PsyCap*, *JobSat*, and *WE* as depicted in Table 11.

The results provide strong support for the study's theoretical model. *PsyCap* had a positive and statistically significant effect on *WE* ($\beta=0.620$, $p<0.01$), confirming Hypothesis 1 (H_1). This suggests that academic staff with higher levels of self-effi-

Table 11 Results for Hypothesis Testing

	Paths	B	SE	CR	β	p
H_1	<i>PsyCap</i> $\rightarrow$ <i>WE</i>	.435	.035	13.391	.620	***
H_2	<i>PsyCap</i> $\rightarrow$ <i>JobSat</i>	.324	.029	5.869	.337	***
H_3	<i>JobSat</i> $\rightarrow$ <i>WE</i>	.387	.069	3.719	.173	***
	Age $\rightarrow$ <i>WE</i>	.017	.021	0.191	-.083	.056
	Sex $\rightarrow$ <i>WE</i>	.029	.038	.654	.028	.513

Source: Authors own work

Table 12 Direct and indirect effects of *PsyCap*, *JobSat* and *WE*

	<i>PsyCap</i>	<i>JobSat</i>	<i>WE</i>
Standardised total effects			
<i>JobSat</i>	0.337	0.000	0.000
<i>WE</i>	0.678	0.173	0.000
Standardised direct effects			
<i>JobSat</i>	0.337	0.000	0.000
<i>WE</i>	0.620	0.173	0.000
Standardised indirect effects			
<i>JobSat</i>	0.000	0.000	0.000
<i>WE</i>	0.058	0.000	0.000

cacy, optimism, hope, and resilience are more likely to exhibit greater engagement in their professional roles of teaching, research and innovation, including community engagement.

In addition, *PsyCap* also significantly predicted *JobSat* ($\beta=0.337$, $p<0.01$), supporting Hypothesis 2 (H_2). This finding highlights the psychological resources that contribute to satisfaction among teaching staff in universities, indicating that when staff feel capable and hopeful, they are more likely to derive satisfaction from their jobs.

Finally, and consistent with Hypothesis 3 (H_3), the path from *JobSat* to *WE* was also positive and significant ($\beta=0.173$, $p<0.01$). This result underscores the mediating role of *JobSat*, suggesting that improvements in staff engagement are, in part, driven by satisfaction with work conditions, fair compensation, growth opportunities, and a positive institutional environment.

Collectively, these findings validate all three hypotheses and reinforce the importance of both psychological and contextual factors in enhancing engagement among academic staff in public universities.

Testing for mediation

To further evaluate the proposed theoretical framework, mediation analysis was conducted to determine whether *JobSat* mediates the relationship between *PsyCap* and *WE*. This analysis sought to test Hypothesis 4 (H_4), which posits that *JobSat* plays a mediating role in this relationship.

As shown in Table 12, the standardised direct effect of *PsyCap* on *WE* was initially strong and significant ($\beta=0.678$; $p<0.001$). However, upon introducing *JobSat* as a mediator, the direct path from *PsyCap* to *WE* slightly declined to $\beta=0.620$

Table 13 Bootstrapping Mediation Results of Job Satisfaction

Parameter	Point Estimate	SE	Lower Bounds	Upper Bounds	p-value	z-value
$WE \leftarrow JobSat$	0.058	0.038	0.405	0.530	0.000	1.526

*** $p < .001$; Bootstrap Sample = 5,000

Source: Authors' own work

($p < 0.001$), while remaining significant. This reduction in effect size indicates that *JobSat* partially mediates the *PsyCap-WE* relationship.

The indirect effect, calculated as the difference between the total and direct effects, was 0.058, suggesting that approximately 6% of the total influence of *PsyCap* on *WE* is transmitted through *JobSat*. Although modest, this indirect path was statistically significant, supporting the presence of partial mediation.

These findings confirm Hypothesis 4 (H_4) and emphasise the importance of *JobSat* as an intervening variable in the *PsyCap-WE* relationship. In practical terms, this means that while *PsyCap* directly enhances *WE*, part of its impact is realised by improving how satisfied academic staff are with their job roles, conditions, and growth opportunities.

To assess the statistical significance of the mediation effect, we employed a bootstrapping procedure with 5,000 resamples to generate 95% bias-corrected confidence intervals (CIs) for the indirect effects. Bootstrapping is a robust, non-parametric approach recommended when testing mediation, especially when indirect effects are expected to be small or when the assumption of normality may not hold (Mallinckrodt et al. 2006; Alfons et al. 2022).

The mediation hypothesis posited that *JobSat* partially mediates the relationship between *PsyCap* and *WE*. The bootstrapping mediation analysis, conducted with 5,000 bootstrap samples, examined the mediating role of *JobSat* on *WE*. The results reported in Table 13 indicated a statistically significant positive effect of *JobSat* on *WE* ($\beta = 0.058$, $SE = 0.038$, $p < 0.001$). The 95% confidence interval, ranging from 0.405 to 0.530, did not include zero, confirming the robustness of the mediation effect. Furthermore, the obtained z-value of 1.526 supports the significance of this relationship. This finding provides strong empirical support for Hypothesis 4 (H_4), reinforcing that *JobSat* plays a meaningful mediating role in the *PsyCap-WE* relationship among academic staff.

Moreover, the mediated model explains 49% of the unique variance in *WE*, highlighting the substantial explanatory power of psychological resources on the *WE* model when both direct and indirect pathways are included.

Discussion

This study aimed to examine the mediating role of *JobSat* in the relationship between *PsyCap* and *WE* among academic staff in Ugandan public universities. The findings underscore the importance of *PsyCap* in shaping employees' positive attitudes and behaviours in the workplace. *PsyCap* fosters psychological resources, such as hope, efficacy, resilience, and optimism, that enable academic staff to navigate the complex

demands of teaching, research, innovation, and community engagement with greater confidence and motivation (Çilek et al. 2025).

The implications extend beyond individual functioning to institutional outcomes. In higher education institutions (HEIs), particularly public universities, cultivating *PsyCap* supports the creation of a more resilient, adaptable, and engaged workforce. A positive work environment characterised by equitable policies, opportunities for growth, and supportive leadership can further strengthen *PsyCap* and, in turn, promote meaningful engagement among staff. This aligns with prior scholarship (e.g., Liu et al. 2024) emphasising the integral role of psychological resources in academic work settings.

Notably, the study reinforces existing literature highlighting the link between *PsyCap* and *JobSat* (Kariri et al. 2023; Liu et al. 2024). *PsyCap* appears to contribute to *JobSat* by fostering a proactive and optimistic orientation toward work, which is critical in contexts where staff often face resource constraints and high workloads. Building the HERO components of *PsyCap* through institutional strategies such as leadership development, mentoring, psychological skills training, and inclusive work practices can enhance both *JobSat* and broader organisational well-being.

Importantly, this study identifies *JobSat* as a key explanatory mechanism through which *PsyCap* influences *WE*, which aligns well with prior studies (Jameel 2024; Siregar et al. 2024; Putri et al. 2025). Rather than a direct one-way relationship, the effect of *PsyCap* on *WE* is partially transmitted through improved *JobSat*. This mediating role of *JobSat* suggests that increasing psychological resources alone may not fully translate into higher engagement unless individuals also derive satisfaction from their roles. Institutions, therefore, must simultaneously invest in both psychological resource development and *JobSat* drivers to sustain high levels of engagement.

From a theoretical standpoint, the findings contribute to the understanding of *PsyCap* as a foundational personal resource within the JD-R framework. Practically, university leadership should prioritise interventions that bolster *PsyCap* and *JobSat* as dual pathways to improving academic staff engagement. This dual focus may yield more sustainable and impactful outcomes than targeting engagement alone.

Theoretical Implications

This study offers several theoretical contributions to the understanding of *PsyCap* and *WE*, particularly within the under-researched context of academic staff in public universities in developing countries such as Uganda.

First, the study extends the existing literature by demonstrating the relevance of *PsyCap* in enhancing *WE* in higher education institutions. While previous research has established that *PsyCap* positively influences work-related outcomes, this study provides further theoretical grounding for *PsyCap* as a driver of employee vigour, dedication, and absorption, core components of *WE*. By contextualising *PsyCap* within academic settings in resource-constrained environments, the study enriches behavioural and occupational research, showing how internal psychological assets enable staff to remain motivated and engaged in the face of professional challenges. This supports the conceptualisation of *PsyCap* not only as an individual trait but as

a functional resource that facilitates higher levels of engagement through enhanced motivation, resilience, and performance orientation.

Second, the study addresses a notable gap in the *PsyCap-WE* literature by exploring the mechanism through which *PsyCap* exerts its influence. Although prior studies (e.g., Liu et al. 2024; Arifin et al. 2024; Pratiwi et al. 2024) affirm a positive association between *PsyCap* and *WE*, few have examined *why* or *how* this relationship occurs. By introducing *JobSat* as a mediating variable, the current study advances theoretical understanding of the *PsyCap-WE* linkage. In particular, it highlights *JobSat* as a motivational construct that translates psychological resources into sustained engagement. This contributes to the growing body of literature on internal psychological processes as mediators in resource-outcome relationships, particularly within academic contexts where such dynamics are understudied (cf. Hoigaard et al. 2012).

Third, the study contributes to the limited body of research examining *WE* within public university settings. Existing work on *WE* has often focused on either organisational or personal antecedents in isolation, with little attention to the integration of both perspectives in academic environments (Arifin et al. 2024; Gürbüz et al. 2023). This study challenges the unidimensional view by demonstrating that both organisational (e.g., *JobSat*) and personal (e.g., *PsyCap*) resources are jointly influential in shaping engagement. The findings support a more holistic framework, arguing for the interplay between structural and psychological conditions in fostering *WE*. This aligns with the proposition that enhancing engagement requires a synthesis of contextual and personal enablers, rather than reliance on either category in isolation (De Clercq and Pereira 2025).

Finally, this study reinforces and extends the COR theory as a conceptual lens for understanding *WE* (Bon and Shire 2022). By positioning *PsyCap* as a core personal resource, the study affirms COR's assumption that individuals strive to acquire, retain, and protect valuable resources in demanding environments. In doing so, it highlights the strategic importance of *PsyCap* as a modifiable resource that enhances both satisfaction and engagement, especially in uncertain and dynamic institutional contexts. This supports recent claims that *PsyCap* plays a key role in enhancing adaptive performance and organisational resilience (Njaramba and Olukuru 2025), thus advancing the theoretical development of Conservation of Resources (COR) theory within workplace research.

Practical Implications

This study offers several actionable insights for higher education institutions, particularly public universities in developing contexts. First, the findings underscore the critical role of *PsyCap* in enhancing *WE* among academic staff (González-Navarro et al. 2019). University leadership should prioritise building a supportive organisational culture that fosters the development of *PsyCap*. Targeted interventions such as leadership development, resilience training, coaching, and mentoring can strengthen the core components of *PsyCap*: hope, efficacy, resilience, and optimism (HERO). Investing in these psychological resources not only improves individual adaptability and well-being but also contributes to sustained engagement and performance across the academic workforce.

Second, the study highlights *JobSat* as a key mechanism through which *PsyCap* influences *WE*. This finding reinforces the need for institutional policies that enhance the quality of work life for academic staff. University administrators should focus on practical drivers of *JobSat*, including equitable compensation, clear career progression pathways, positive working conditions, and inclusive organisational climates. Promoting satisfaction at work is not merely a welfare concern but a strategic lever for increasing engagement and institutional productivity (Yang et al. 2024; Nachonga et al. 2022).

Taken together, these implications suggest that enhancing academic staff engagement requires a dual approach: developing individual psychological resources while simultaneously improving structural and environmental factors that shape job satisfaction.

Conclusions

This study offers significant theoretical and practical insights into the relationship between *PsyCap*, *JobSat*, and *WE* within Uganda's public university context. By anchoring the investigation in the JD-R model (Bakker and Demerouti 2007) and COR theory (Hobfoll 1989), the research addresses a critical gap in the *PsyCap-WE* literature by foregrounding the importance of personal resources in shaping employee engagement in resource-constrained academic settings.

The empirical evidence substantiates the assertion that *PsyCap* and *JobSat* are pivotal drivers of *WE* among academic staff. More importantly, the mediation analysis reveals that *JobSat* partially explains how *PsyCap* enhances *WE*, suggesting that the motivational benefits of *PsyCap* are activated and sustained through improved *JobSat*. In other words, academic staff with high *PsyCap* are more likely to be satisfied with their jobs, and this satisfaction, in turn, catalyses their engagement at work.

This integrated perspective contributes to theory development by proposing a context-specific model of *WE* tailored to Uganda's public universities, an underexplored setting in global engagement research. The findings extend the JD-R and COR frameworks by demonstrating that *PsyCap* functions not only as a personal psychological resource but also as a strategic input that can buffer against academic stressors and promote job-related fulfilment. Simultaneously, *JobSat* emerges as both a key outcome of *PsyCap* and a mediating pathway to *WE*, underscoring its central role in the engagement process.

From a practical standpoint, the results offer university leaders a theoretically informed and empirically supported blueprint for enhancing *WE*: invest in developing academic staff's *PsyCap* and create enabling environments that foster *JobSat*. Initiatives such as resilience training, optimism-building workshops, mentorship programmes, and equitable reward systems can significantly elevate engagement levels across the academic workforce.

Generally, this study advances current understanding by illustrating how *PsyCap*, through the mechanism of *JobSat*, influences *WE*, especially in the context of under-resourced public institutions. It reinforces the necessity of integrating personal and

organisational resources into engagement strategies and provides a foundation for future research and policy reforms in higher education.

Limitations and areas for future research

As with all empirical investigations, this study is subject to certain limitations that warrant careful consideration when interpreting its findings. First, the research sample was limited to academic staff in public universities in Uganda, which constrains the generalisability of the results. While this focus provided valuable context-specific insights into a relatively under-researched environment, it may not fully represent the broader academic landscape, including private universities, technical institutions, or non-academic sectors. Future research could address this limitation by employing larger and more diverse samples across institutional types, national boundaries, and cultural contexts, especially in other developing and developed countries, to test the robustness and transferability of the proposed *PsyCap-JobSat-WE* model.

Second, the model accounted for approximately 49.4% of the variance in *WE*, indicating that while *PsyCap* and *JobSat* are significant predictors, other relevant variables remain unexplored. This opens the door for further investigation into additional personal resources (e.g., emotional intelligence, mindfulness), organisational resources (e.g., leadership style, organisational justice, autonomy), or contextual factors (e.g., socio-economic conditions, institutional culture) that may enhance the explanatory power of the model. Incorporating such factors could help build a more comprehensive and contextually grounded understanding of what drives engagement in academia.

Third, the cross-sectional design limits the ability to infer causal relationships among the variables studied. Although the theoretical frameworks (JD-R and COR) support directional assumptions from *PsyCap* and *JobSat* to *WE*, the data do not allow for definitive conclusions about temporal sequencing or causality. Future studies employing longitudinal designs or experimental methods would be better positioned to assess how *PsyCap* evolves over time and whether improvements in *PsyCap* lead to sustained changes in *JobSat* and engagement. This is particularly important given that *PsyCap* is theorised to be a developable state-like resource, with components such as hope, self-efficacy, resilience, and optimism potentially fluctuating or strengthening with targeted interventions.

Lastly, while this study provides novel empirical evidence from a developing African context, which is often underrepresented in organisational psychology research, it is important to acknowledge that unique institutional, cultural, and economic factors may have shaped the findings. Comparative studies across multiple African countries or between African and non-African settings could reveal how contextual differences moderate the relationships among *PsyCap*, *JobSat*, and *WE*.

Despite these limitations, the study contributes meaningfully to the growing body of research on employee engagement by offering one of the first empirical validations of a *PsyCap*-based engagement model in Uganda's higher education sector. It serves as a foundational step for future research and policy development aimed at strengthening the psychological and organisational conditions necessary for enhancing work engagement among academic professionals.

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Data availability The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Competing interests The authors declare that they have no competing interests.

Ethics approval This study was approved by the Research and Ethics Committee of the Faculty of Health of Busitema University (Ref. No.: BUFHS-2023–101). In line with the Helsinki Declaration (World Medical Association 2013), participants were informed of the study's purpose and provided written informed consent. Individuals who did not consent or did not meet the inclusion criteria were excluded.

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