

How to promote employee engagement? A comparison of top-down versus bottom-up approaches

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Komal Goyal

JC Bose University of Science and Technology YMCA, Faridabad, India

Weng Marc Lim

*Sunway Business School, Sunway University, Sunway City, Malaysia;
ASU-Cintana Alliance Global Affiliate Faculty, Arizona State University,
Tempe, Arizona, USA;*

*School of Business, Law and Entrepreneurship, Swinburne University of Technology,
Hawthorn, Australia and*

Global Research Centre, Sungkyunkwan University, Suwon, South Korea, and

Ashutosh Nigam and Neha Goyal

JC Bose University of Science and Technology YMCA, Faridabad, India

Abstract

Purpose – Although the importance of employee engagement has been widely acknowledged and the ways to promote it have been extensively studied, little is known about which approach is more effective, which, in turn, limits our understanding of how employee engagement is affected when multiple approaches are considered and implemented simultaneously. To address this issue, this study aims to compare whether a top-down approach (examined through human resource management) or a bottom-up approach (examined through job crafting) is more effective in promoting employee engagement with and without its facilitating mechanisms (namely psychological ownership and organizational citizenship behavior).

Design/methodology/approach – This study collects survey responses from 364 executives from the IT services industry an industry that faces unique challenges due to its dynamic nature and reliance on skilled talent – and analyzes these responses using both a hypothesis-driven approach (structural equation modeling) and a data-driven approach (artificial neural network) to derive richer insights into how employee engagement can best be promoted.

Findings – The results reveal a direct effect of (bottom-up) job crafting – but not (top-down) human resource management – on employee engagement. However, (top-down) human resource management's influence on employee engagement becomes significant when mediated by psychological ownership and organizational citizenship behavior, whereas (bottom-up) job crafting consistently exerts both direct and indirect influences on employee engagement through psychological ownership and organizational citizenship behavior. The artificial neural network provides granular insights, highlighting organizational citizenship behavior as the most influential factor shaping employee engagement, followed by job crafting, psychological ownership and human resource management.

Practical implications – The results suggest that a bottom-up approach (job crafting) is generally more effective and straightforward for enhancing employee engagement compared to a top-down approach (human resource management), making it ideal for generating immediate, short-term results. However, to maximize and sustain employee engagement in the long run, organizations should strategically implement both approaches concurrently, reinforcing them through psychological ownership and organizational citizenship behavior.

Originality/value – This study contributes novel evidence showing that implementing human resource management strategies alone may not sufficiently generate employee engagement, particularly in people-intensive service industries. Therefore, this study underscores the necessity of aligning human resource management practices to support job crafting, foster psychological ownership and promote organizational citizenship behavior to effectively drive employee engagement.

Keywords Employee engagement, Human resource management, Job crafting, Psychological ownership, Organizational citizenship behavior, Structural equation modeling, Artificial neural network

Paper type Research paper



1. Introduction

Employee engagement has attracted significant attention among academics and practitioners (Bailey, 2022), yet many organizations continue to struggle with how best to elevate and sustain employee engagement (Lee *et al.*, 2023). Numerous studies have examined practices that appear to strengthen employee engagement (Alam *et al.*, 2024; Chandni and Rahman, 2020), yet competing claims persist regarding the most effective means to achieve enduring outcomes (Byrne, 2022; Davis and Van der Heijden, 2024; Wittenberg *et al.*, 2024).

On the one hand, researchers emphasize top-down approaches—commonly operationalized through (traditional) human resource management (HRM) practices—as effective pathways to stimulate employee engagement (Goyal *et al.*, 2024a). These approaches include *ability-enhancing* HRM practices aimed at improving employees' competencies and skills through training and development programs; *motivation-enhancing* HRM practices designed to encourage higher effort and proactive behaviors through performance-based compensation and rewards; and *opportunity-enhancing* HRM practices intended to empower employees through increased autonomy and involvement in decision-making (Li *et al.*, 2022; Salvador-Gómez *et al.*, 2023), which, in turn, support their performance (Shahzad *et al.*, 2025). Despite their promise, these HRM practices may not always produce the immediate improvements in employee engagement that organizations often require (Johar *et al.*, 2024), thereby igniting the need for further research to clarify and improve their effectiveness (*1st research motivation*).

On the other hand, growing evidence indicates that engagement can also emerge from bottom-up actions that offer employees greater autonomy and personal involvement in their jobs (Björk *et al.*, 2021). Job crafting, for instance, empowers employees to engage in self-initiated changes at work (e.g. taking on additional tasks that match their interests, reorganizing the way tasks are performed, or proactively seeking out collaboration with colleagues) to achieve better alignment between their personal needs and preferences and organizational objectives (Roczniowska *et al.*, 2023). This bottom-up perspective suggests that employees who proactively reshape their responsibilities can drive their own engagement more swiftly than those who await top-down directives (Tims *et al.*, 2022), which, in turn, supports innovation performance (Rafiq *et al.*, 2023). Yet, despite its apparent advantages, the effectiveness of job crafting relative to the (traditional) HRM practices above—which differs from HRM systems specifically designed to support job crafting (Hu *et al.*, 2022)—remains relatively underexplored in promoting employee engagement (*2nd research motivation*).

Extant research on psychological ownership and organizational citizenship behavior (OCB) introduces additional layers to this debate. Psychological ownership, whereby individuals feel a sense of personal possession toward certain aspects of their work or workplace, is associated with stronger emotional attachment and sustained engagement (Dai *et al.*, 2021; Zhang *et al.*, 2021), which, in turn, contributes to job performance (Bai *et al.*, 2024) and organizational imperatives (Jia *et al.*, 2024). Similarly, scholars note that OCB—defined as voluntary actions beyond formal job duties (Organ, 1988)—positively enhances organizational performance and influences responsiveness to market pressures (Showkat *et al.*, 2024; Vargas-Hernandez and González-Ávila, 2025). Although research indicates that both psychological ownership and OCB play a key role in supportive HRM practices (Goyal *et al.*, 2024b), researchers caution that these factors alone may not sufficiently ignite engagement unless employees also have opportunities to modify their roles actively (Goyal *et al.*, 2024a). Therefore, this study argues that deeper investigation is needed into how organizations can concurrently leverage top-down and bottom-up approaches alongside psychological ownership and OCB to sustain lasting employee engagement (*3rd research motivation*).

To critically advance this debate and integrate the identified research motivations, this article draws on *social exchange theory* (Blau, 1964) as its focal theoretical lens to explain the reciprocal interactions between employees and organizations (Cropanzano and Mitchell, 2005). Unlike other theories that are only tangentially applicable—such as stakeholder theory

(Freeman, 1984), which emphasizes broader stakeholder interests rather than internal organizational exchanges, or self-determination theory (Ryan and Deci, 2000), which highlights employees' autonomy, competence, and relatedness without fully capturing organizational–employee reciprocity—social exchange theory captures how organizational practices (top-down HRM) and opportunities provided by organizations for individual initiatives (bottom-up job crafting) serve as resources that employees reciprocate by demonstrating psychological ownership, OCB, and engagement. The *research objective* of this article is, therefore, to compare these two approaches—top-down HRM practices and bottom-up job crafting—to critically address three key *research questions* (RQs): whether one approach yields more immediate and substantial engagement benefits (RQ₁), whether psychological ownership and OCB explain how the effects of these approaches translate into employee engagement (RQ₂), and whether integrating both approaches represents the most effective strategy for enhancing employee engagement (RQ₃). Answering these RQs directly addresses ongoing tensions between traditional HRM and job crafting (*1st research contribution*), clarifies the unique and combined roles each plays in promoting employee engagement (*2nd research contribution*), and provides actionable insights for organizations seeking to elevate and sustain employee engagement (*3rd research contribution*).

2. Literature review and hypothesis development

2.1 HRM and employee engagement

HRM spans a broad set of interlinked practices—such as hiring, training, and talent retention—that aim to shape employee attitudes and behavior (Azam, 2023). Prior studies have shown that well-designed HRM practices can strengthen employees' autonomous motivation (Han et al., 2024), reduce stress through work-life balance (Rashmi and Kataria, 2022), and enhance psychological resources that are crucial for employee engagement (Jose et al., 2024). However, recent research points out that these advantages may not always materialize (Johar et al., 2024). Some HRM strategies yield modest gains in engagement that dissipate when work environments are unpredictable, whereas others appear more enduring (Erederi et al., 2022; Oliveira and Rocha, 2017). Critics thus question whether conventional HRM practices alone can deliver the short-term boosts in engagement organizations seek, especially in industries undergoing rapid change (Yalenios and d'Armagnac, 2023). From a *social exchange theory* perspective, employees may reciprocate supportive HRM with heightened engagement, but the degree of reciprocity can vary depending on individual and contextual factors (Presbitero, 2017; Saks, 2022; Urbini et al., 2021). This study contends that despite unresolved questions regarding the immediacy of HRM's impact, recent evidence suggests that HRM practices, which by nature are ingrained in organizational routines and structures, generally provide essential and ongoing support for employee engagement (Pimenta et al., 2024). Accordingly, the following hypothesis is advanced:

H1. HRM has a positive influence on employee engagement.

2.2 Job crafting and employee engagement

A growing body of work argues that organizational practices alone may not suffice to foster the deeper sense of ownership and interest required for sustained engagement to perform at work (Ababneh, 2021; Bakker et al., 2014). Instead, employees themselves can initiate changes in their job responsibilities, social interactions, or work methods—a process termed “job crafting” (Roczniowska et al., 2023; Tims et al., 2022). This self-directed reshaping is believed to align personal preferences with organizational objectives more effectively than standard top-down interventions (Björk et al., 2021; Tims et al., 2022). Yet, empirical evidence on job crafting's effectiveness in driving engagement remains inconsistent and limited. Some studies indicate that employees who craft their tasks report heightened engagement (Bakker et al., 2014) and well-being (Ghazzawi et al., 2021), whereas others question whether employees

lacking autonomy or self-efficacy would be equally motivated or able to craft their jobs (Miraglia *et al.*, 2017). Divergent findings also raise questions regarding job crafting's universality and staying power, as pursuing more challenging job demands can unintentionally increase workload, thus consuming additional resources and eventually undermining employees' capacity to remain engaged over time (Birman *et al.*, 2024). Despite these debates, *social exchange theory* (Blau, 1964; Cropanzano and Mitchell, 2005) suggests that employees are likely to reciprocate autonomy and organizational support with higher engagement, leading many scholars to conclude that job crafting offers a potentially faster route to engagement by giving employees direct control over their daily experiences (Roczniewska *et al.*, 2023; Tims *et al.*, 2022). As such, the following hypothesis is established:

H2. Job crafting has a positive influence on employee engagement.

2.3 The mediating role of psychological ownership

2.3.1 *HRM, psychological ownership, and employee engagement.* Although HRM is often praised for cultivating a supportive work environment (Azam, 2023), the mechanisms that translate HRM practices into stronger engagement remain contested. Scholars argue that psychological ownership—where employees feel a personal sense of possession toward their work—is essential for deep commitment and devotion (Van Dyne and Pierce, 2004). Indeed, prior research has shown that practices focusing on fair compensation (Kim, 2025) and participative decision-making (Verkuyten, 2025) can spark this sense of ownership. Yet, not all studies confirm that HRM automatically drives psychological ownership, with some noting that employees may dismiss HRM practices such as empowerment as transactional gestures if they perceive a lack of genuine inclusion or autonomy (Katou, 2022). Tensions thus persist regarding when HRM triggers psychological ownership strongly enough to elevate engagement. Indeed, scholars have offered mixed views: some emphasize the positive potential of well-aligned HRM systems (Baykal and Bayraktar, 2022), whereas others note that surface-level practices fail if they do not address underlying employee needs (Boonsiritomachai *et al.*, 2022). In line with *social exchange theory* (Blau, 1964; Cropanzano and Mitchell, 2005), this study posits that HRM can effectively facilitate psychological ownership—provided employees perceive HRM practices as genuinely supportive, valuable, and responsive to their needs (e.g. ability-, motivation-, and opportunity-enhancing practices; Li *et al.*, 2022; Salvador-Gómez *et al.*, 2023)—and that psychological ownership mediates the relationship between HRM and employee engagement because such ownership creates deeper emotional bonds and personal accountability, driving employees to reciprocate organizational support through increased engagement (Baykal and Bayraktar, 2022; Van Dyne and Pierce, 2004). Consequently, the following hypothesis is formulated:

H3a. Psychological ownership mediates the relationship between HRM and employee engagement.

2.3.2 *Job crafting, psychological ownership, and employee engagement.* Job crafting, unlike standardized HRM practices, grants employees a distinct sense of control and identity in shaping their work experiences (Roczniewska *et al.*, 2023; Tims *et al.*, 2022). This autonomy fosters psychological ownership by satisfying deeper motives such as self-efficacy and belonging (Jing and Yan, 2022). Indeed, prior research highlights that employees who actively reshape their tasks (Shin *et al.*, 2018; Tims *et al.*, 2015) and social interactions (Doden *et al.*, 2024) often develop stronger personal connections to their roles, significantly enhancing their engagement. Critics caution, however, that not all forms of job crafting ensure meaningful ownership. An overemphasis on minor task adjustments, for example, may fail to generate the deeper sense of meaning and attachment necessary for lasting commitment (Letona-Ibañez *et al.*, 2021). Moreover, the effectiveness of job crafting can vary according to the availability of job resources (Tims *et al.*, 2022) and individual employee readiness (Szóts-Kováts and Kiss, 2023). In line with *social exchange theory* (Blau, 1964; Cropanzano and Mitchell, 2005), this

study contends that when organizations genuinely empower employees to craft their roles—thus providing valuable resources—employees reciprocate through increased psychological ownership, which mediates the relationship between job crafting and employee engagement because employees who experience ownership feel a deeper emotional investment and personal responsibility toward their work, prompting sustained engagement (Jing and Yan, 2022; Tims *et al.*, 2022). Hence, the following hypothesis is posited:

H3b. Psychological ownership mediates the relationship between job crafting and employee engagement.

2.4 The mediating role of organizational citizenship behavior (OCB)

2.4.1 HRM, OCB, and employee engagement. A parallel debate centers on whether HRM practices produce stronger engagement by encouraging employees to go beyond prescribed duties, commonly referred to as OCB (Organ, 1988). Scholars have documented a link between a positive work environment and OCB, suggesting that employees reciprocate supportive HRM by helping co-workers and upholding a culture of cooperation (Carter *et al.*, 2021). Nonetheless, counterarguments exist, whereby some scholars maintain that employees may perform extra-role behaviors only under certain conditions, such as fair reward systems (Mach *et al.*, 2025) and genuine opportunities for advancement (Shang *et al.*, 2021). Moreover, while research has shown that OCB can strengthen employees' commitment and intent to stay (Halid *et al.*, 2024), skeptics caution that OCB alone may not suffice to boost engagement unless employees perceive a clear two-way exchange between themselves and the organization (Bolino *et al.*, 2024). In line with *social exchange theory* (Blau, 1964; Cropanzano and Mitchell, 2005), this study argues that employees engage in OCB—and subsequently become more deeply engaged—when they interpret HRM practices as genuine organizational support worthy of reciprocal effort because such perceptions of reciprocity foster a sense of emotional attachment and obligation, motivating employees to consistently perform beyond prescribed roles, thereby strengthening their overall engagement (Bolino *et al.*, 2024; Carter *et al.*, 2021). Therefore, the following hypothesis is proposed:

H4a. OCB mediates the relationship between HRM and employee engagement.

2.4.2 Job crafting, OCB, and employee engagement. Job crafting often enables employees to structure their tasks and social interactions in ways that align with personal strengths and interests (Roczniowska *et al.*, 2023; Tims *et al.*, 2022). This freedom can stimulate a proactive attitude toward colleagues and the organization (Srivastava and Pathak, 2020). Yet, the relationship between job crafting and OCB is not always straightforward. For instance, employees who encounter strict policies or minimal autonomy may be unable to craft their roles adequately and thus refrain from discretionary behaviors; however, when job crafting does occur, employees may feel motivated to support co-workers, handle shared challenges, and invest in tasks beyond formal role requirements (Magdaleno *et al.*, 2023). In line with *social exchange theory* (Blau, 1964; Cropanzano and Mitchell, 2005), this study contends that when organizations grant employees sufficient autonomy and opportunities to craft their roles, employees reciprocate by engaging in higher levels of OCB, which, in turn, enhances employee engagement because discretionary behaviors—such as taking initiative beyond formal duties and voluntarily supporting colleagues—strengthen employees' social ties and personal investment in their work (Magdaleno *et al.*, 2023; Srivastava and Pathak, 2020). Thus, the following hypothesis is put forth:

H4b. OCB mediates the relationship between job crafting and employee engagement.

3. Methodology

3.1 Context

The service sector depends heavily on human interaction and interpersonal skills, clearly distinguishing it from the manufacturing sector, which mainly relies on machinery for

production. This distinction compels service-driven organizations to emphasize employee engagement as a strategic means of sustaining competitive advantage (Bhasin *et al.*, 2019). Within the service sector, the Indian information technology (IT) services industry represents an especially relevant context because it is highly dynamic, continually shaped by technological advances, and marked by intense competition for skilled personnel (Gupta and Basole, 2020). Noteworthy, India's global prominence as one of the largest IT outsourcing providers (Statista, 2025) underscores the industry's reliance on employee engagement, as employees are integral to delivering consistent service quality, innovative solutions, and client satisfaction (Mahendramohan *et al.*, 2023). Recognizing these strategic demands, this study positions the Indian IT services industry as a particularly suitable context for investigating employee engagement—an area where maintaining consistently high employee involvement at work is challenging yet crucial (Hasan *et al.*, 2021). Rapid growth and continuous change within IT services further necessitate strategic measures that effectively balance structured, top-down HRM interventions with flexible, bottom-up initiatives such as job crafting. Such balanced strategies ensure employees maintain sufficient motivation and resilience to address evolving client expectations and competitive pressures. Unlike manufacturing sectors, where automation frequently substitutes for human effort, IT services require specialized human capital capable of integrating technical knowledge with advanced relational competencies. In this regard, the selected industry aligns closely with both the theoretical arguments and practical objectives of this study. In engaging with this specific context, the present study examines whether competing claims about the effectiveness of top-down (HRM) versus bottom-up (job crafting) approaches to employee engagement can be reconciled and explores how psychological ownership and OCB mediate these relationships, recognizing that sustained employee engagement is paramount in an industry dependent upon the ongoing engagement of its workforce.

3.2 Instrumentation

A survey was conducted using a questionnaire with items adapted from past studies. All items were answered on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). *First*, this study adapted ability-motivation-opportunity (AMO) based HRM practices such as those that are ability-enhancing (e.g. competency hiring, training), motivation-enhancing (e.g. financial and non-financial reward), and opportunity-enhancing (e.g. autonomy, career development, open participation) (Mehralian *et al.*, 2021; Nadeem and Rahat, 2021). For instance, HRM1 is the selection of new hires based on their competency and skills, HRM2 provides continuous training opportunities to employees (ability-enhancing practices), HRM3 offers rewards comparable to other organizations for the same job and profile (motivation-enhancing practices), HRM4 includes career development opportunities within the IT company, and HRM5 involves employee participation in decision-making (opportunity-enhancing practices). *Second*, job crafting measures were adapted from Leena *et al.* (2009), utilizing individual and collaborative job crafting—namely, “On your own, change the way you do your work to make it easier for yourself” (JC1) and “Decide together with your co-workers to organize special events at your workplace” (JC2). *Third*, psychological ownership measures were adapted from Van Dyne and Pierce (2004), including “This is my company” (PO1), “I sense that I own this company” (PO2), and “I feel a very high degree of personal ownership” (PO3). *Fourth*, OCB measures were adapted from Lee and Allen (2002), including “Assisted others with their duties” (OCB1), “Willingly gave time to help others who had work-related problems” (OCB2), and “Expressed loyalty towards the company” (OCB3). *Fifth*, employee engagement measures were adapted from Schaufeli *et al.* (2006), measuring vigor – “At my work, I feel bursting with energy” (EE1); dedication – “My job inspires me” (EE2); and absorption – “When I am working, I forget everything else around me” (EE3).

3.3 Sampling

A combination of a random and purposive sampling approach was adopted to administer the survey and collect the data. The random sampling was applied to select service providers in the IT industry while the purposive sampling approach was used to select respondents who are operating at the executive-level with service responsibilities in this industry. In particular, 500 surveys were administered to executive-level workers in the IT services industry in Northern India, of which 364 were returned and usable ($\pm 73\%$ usable response rate). Of the 364 respondents, 54% were male and the remaining female. The majority of participants were graduates (63%) and 27% were postgraduates. Sixty percent of respondents belonged to the 20–30 age group with five or fewer years of experience. Thirty-five percent were in the 30–40 age group with up to 10 years of experience, and the rest were above 40 years old with extensive experience.

3.4 Analytical techniques

This study incorporates both structural equation modeling (SEM) and artificial neural network (ANN) analyses in a single investigation to enable a richer understanding of the factors driving employee engagement (Shahzad *et al.*, 2020). SEM, which is hypothesis-driven, is complemented by the data-driven capabilities of ANN, thereby enabling the study to rigorously test its theoretical assumptions while also uncovering complex patterns that may further explain employee engagement. This dual deductive-inductive approach, therefore, reinforces the rigor of the study’s conclusions about employee engagement.

4. Results

4.1 Preliminary checks: common method bias

The study could potentially suffer from the problem of common method bias (CMB) since the respondents answered the questionnaire for all variables at the same time (Podsakoff *et al.*, 2003). To address this issue, a single-factor test and a latent marker variable test were conducted (Lim, 2025). The single factor test revealed a variance (43.38%) below the 50% maximum threshold for significant CMB, whereas the latent marker variable test showed no significant differences across two models—one incorporating the marker variable and the other without it (Table 1). Therefore, CMB is not a significant concern for this study.

4.2 Measurement model: reliability and validity

Table 2 presents the statistical results required to evaluate the reliability and validity of the measurement model. In terms of reliability, the Cronbach’s alpha, composite reliability (ρ_c), and Dijkstra-Henseler’s ρ_A values for all variables are above the minimum threshold of 0.70, which indicates that the measures for the variables are reliable (Hair *et al.*,

Table 1. Common method bias (CMB) assessment using a latent marker variable test

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (SD)	<i>p</i> -value	<i>t</i> -statistic	Observation
Human resource management → Employee engagement	0.011 (0.010)	0.011 (0.011)	0.054 (0.054)	0.834 (0.851)	0.210 (0.188)	No significant difference
Job crafting → Employee engagement	0.213 (0.208)	0.217 (0.212)	0.078 (0.077)	0.006 (0.007)	2.727 (2.704)	No significant difference

Note(s): Figures inside and outside brackets indicate with and without latent marker variable
Source(s): Authors’ own compilation

Table 2. Measurement model

Construct	Panel A. Descriptive statistics		Panel B. Discriminant validity					Panel C. Convergent validity	Panel D. Internal consistency or reliability		
	Mean (\bar{x})	Standard deviation (SD)	Human resource management	Job crafting	Psychological ownership	Organizational citizenship behavior	Employee engagement	Average variance extracted (AVE)	Cronbach's alpha (α)	Composite reliability (rho_c)	Dijkstra-Henseler's rho (rho_a)
Human resource management	5.89	1.08	<i>0.831</i>	0.718	0.660	0.607	0.574	0.691	0.887	0.918	0.888
Job crafting	5.63	1.24	0.612	<i>0.920</i>	0.809	0.768	0.780	0.847	0.819	0.917	0.819
Psychological ownership	5.35	1.61	0.592	0.697	<i>0.919</i>	0.568	0.702	0.844	0.907	0.942	0.908
Organizational citizenship behavior	5.93	1.05	0.529	0.644	0.501	<i>0.879</i>	0.762	0.773	0.854	0.911	0.854
Employee engagement	5.65	0.99	0.494	0.642	0.607	0.643	<i>0.859</i>	0.739	0.823	0.894	0.826

Note(s): Minimum or maximum thresholds are indicated in brackets within the following panel statements. Panel A indicates the descriptive statistics. Panel B informs the assessment of discriminant validity, where italic values on the diagonal represent the square roots of average variance extracted (AVE), which should exceed the values below the diagonal representing correlations (≤ 0.70), while values above the diagonal represent the heterotrait-monotrait (HTMT) ratio of correlations (≤ 0.85). Panel C informs the assessment of convergent validity (≥ 0.50). Panel D informs the assessment of internal consistency or reliability (≥ 0.70)

Source(s): Authors' own compilation

2017). In terms of convergent validity, the average variance extracted (AVE) for all variables is above the minimum threshold of 0.50, which means that the measures are closely related to their respective variables (Fornell and Larcker, 1981). In terms of discriminant validity, the square root of the AVEs are larger than the correlations between variables (Fornell and Larcker, 1981) and the heterotrait-monotrait (HTMT) ratio of correlations are less than the maximum threshold of 0.85 (Henseler et al., 2015), which suggests that the variables are distinct and do not overlap significantly. Therefore, the measurement model can be said to possess adequate reliability as well as convergent and discriminant validity.

4.3 Structural model: main and mediation effects

Partial least squares SEM (PLS-SEM) was employed to test the hypotheses. A nonparametric bootstrap with 5,000 samples was used to assess the significance of coefficients in PLS-SEM (Sarstedt et al., 2022), testing the impact of HRM and job crafting on employee engagement through psychological ownership and OCB. The R² for psychological ownership, OCB, and employee engagement were 0.529, 0.444, and 0.540, respectively, indicating a high level of explanatory power.

Figure 1 and Table 3 Panel A illustrate the main effects, showing an insignificant direct effect of HRM ($\beta = 0.011, p = 0.834 > 0.05, t = 0.210 < 1.96, f^2 = 0.000$) and a significant direct effect of job crafting ($\beta = 0.213, p = 0.006 < 0.01, t = 2.727 > 2.576, f^2 = 0.037$) on employee engagement, with the strength of the latter relationship characterized by a small effect size (Cohen, 1988; Lim, 2025). Thus, H₂ is supported, but not H₁.

Table 3 Panel B reports the mediating effects. The indirect effect of HRM to employee engagement through psychological ownership was significant ($\beta = 0.071, p = 0.009 < 0.01, t = 2.632 > 2.576$), as was the path from job crafting to employee engagement via psychological ownership ($\beta = 0.143, p = 0.000 < 0.01, t = 4.067 > 2.576$), implying that psychological ownership facilitates this indirect effect through full and partial mediation, respectively. Therefore, H_{3a} and H_{3b} are supported. Similarly, the indirect effect of HRM to employee engagement through OCB was significant ($\beta = 0.079, p = 0.001 < 0.01, t = 3.425 > 2.576$), as was the path from job crafting to employee engagement via OCB

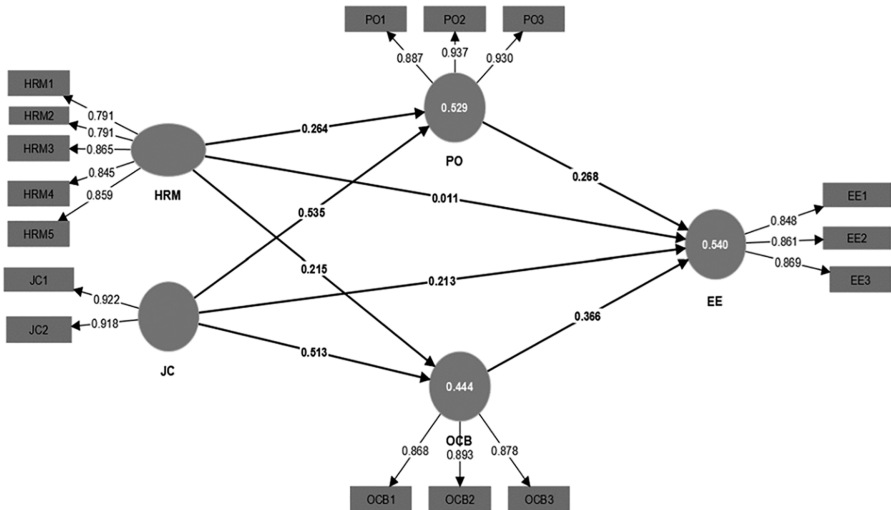


Figure 1. Structural model. Notes: HRM = Human resource management. JC = Job crafting. PO = Psychological ownership. OCB = Organizational citizenship behavior. EE = Employee engagement. Source: Authors' own illustration

Table 3. Structural model

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (SD)	p-value	t-statistic	f ²	R ²	Observation	Hypothesis testing
<i>Panel A. Main effects</i>									
H1. Human resource management → Employee engagement	0.011	0.011	0.054	0.834	0.210	0.000	0.540	Not significant	Not supported
H2. Job crafting → Employee engagement	0.213	0.217	0.078	0.006	2.727	0.037		Significant	Supported
<i>Panel B. Mediation effects</i>									
H3a. Human resource management → Psychological ownership → Employee engagement	0.071	0.072	0.027	0.009	2.632			Full mediation	Supported
H3b. Job crafting → Psychological ownership → Employee engagement	0.143	0.142	0.035	0.000	4.067			Partial mediation	Supported
H4a. Human resource management → Organizational citizenship behavior → Employee engagement	0.079	0.078	0.023	0.001	3.425			Full mediation	Supported
H4b. Job crafting → Organizational citizenship behavior → Employee engagement	0.188	0.189	0.042	0.000	4.476			Partial mediation	Supported
Source(s): Authors' own compilation									

($\beta = 0.188, p = 0.000 < 0.01, t = 4.476 > 2.576$), implying that OCB facilitates this indirect effect through full and partial mediation, respectively. Thus, H_{4a} and H_{4b} are supported.

4.4 Artificial neural network

ANNs are increasingly acknowledged in business research as a powerful tool for simulating human decision-making and judgment processes (Haykin, 2004). They are distinct from traditional regression models as they do not necessitate linearity assumptions (Wilson and Bettis-Outland, 2020), and thus, they can serve as a suitable data-driven complement to the hypothesis-driven SEM (Shahzad et al., 2020).

In our study, we employed the feed-forward back-propagation (FFBP) multilayer perceptron (MLP) technique to train the data and assign relative weights to the predictors. To mitigate the risk of overfitting, we used a 10-fold cross-validation method, allocating 90% of the data for training and 10% for testing. Training data constitutes a subset of the original data dedicated to training the model, whereas testing data is used to verify the model’s accuracy.

The basic structure of the neural network, as depicted in Figure 2, consists of three primary layers: input, hidden, and output. The input layer houses the predictors (HRM, job crafting, psychological ownership, and OCB). The hidden layer contains unseen units or nodes, the value of each can be characterized as a function of the predictive variables. The specific function shape is determined by the network type and user-defined parameters. The responses are housed in the final layer, namely, the output layer, which in this context corresponds to employee engagement.

The network accommodates bias in a manner similar to the inclusion of an intercept in a linear equation. Alongside the weighted total of the inputs to the neuron, bias acts as an additional parameter in neural networks, altering the output and effectively shifting the

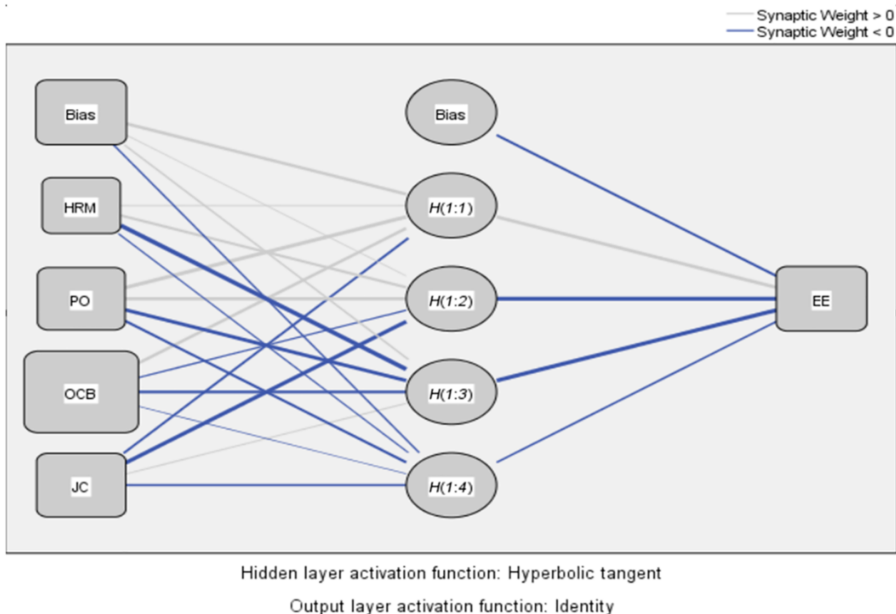


Figure 2. Neural network. **Notes:** HRM = Human resource management. JC = Job crafting. PO = Psychological ownership. OCB = Organizational citizenship behavior. EE = Employee engagement. Bias = Intercept. **Source:** Authors’ own illustration

activation function to the right or left. This is depicted in Figure 2, where dark lines indicate a strong relationship between inputs (predictors) and output (outcomes).

We designed the input and hidden layers using MLP and sigmoid activation functions, implemented in the Statistical Package for Social Science (SPSS). The prediction accuracy was assessed via the root mean square error (RMSE) values (Table 4). The average RMSE values for all ANN models ranged from 0.055 to 0.159 for training data and 0.012 to 0.152 for testing data. The minimal differences between training and testing RMSE values, combined with their overall low magnitude—especially in the testing set—indicate that the ANN models reliably capture the relationships between the predictors and the outcome.

To evaluate the normalized importance of each input neuron, we also conducted a sensitivity analysis. We first computed the average relative importance for all 10 neural networks. We then normalized these values by dividing each by the highest importance value, converting the result into a percentage. As illustrated in Table 5, the normalized importance varied from 44.5% to 100%. Among the factors impacting employee engagement, OCB was identified as the most significant, followed by job crafting, psychological ownership, and HRM.

Table 4. Root mean square evaluation (RMSE)

NN	Training data				Testing data			
	N	SSE	SSE/N	RMSE	N	SSE	SSE/N	RMSE
(i)	318	5.327	0.016752	0.129428	46	0.19	0.00413	0.064268
(ii)	330	7.049	0.021361	0.146153	34	0.049	0.001441	0.037963
(iii)	322	0.973	0.003022	0.054970	42	0.973	0.023167	0.152206
(iv)	328	6.311	0.019241	0.138711	36	0.549	0.01525	0.123491
(v)	320	6.982	0.021819	0.147712	44	0.467	0.010614	0.103023
(vi)	327	5.633	0.017226	0.131249	37	0.067	0.001811	0.042554
(vii)	327	7.516	0.022985	0.151607	37	0.773	0.020892	0.14454
(viii)	323	5.716	0.017697	0.133029	41	0.869	0.021195	0.145585
(ix)	325	8.193	0.025209	0.158774	39	0.006	0.000154	0.012403
(x)	318	3.759	0.011821	0.108723	46	0.476	0.010348	0.101724

Note(s): NN = Neural network. N = Sample size. SSE = Sum of squared error. RMSE = Root mean square error

Source(s): Authors' own compilation

Table 5. Sensitive analysis

NN	HRM	PO	OCB	JC
(i)	0.113	0.203	0.465	0.219
(ii)	0.243	0.185	0.388	0.185
(iii)	0.103	0.189	0.445	0.263
(iv)	0.192	0.169	0.443	0.197
(v)	0.201	0.22	0.444	0.134
(vi)	0.146	0.203	0.498	0.153
(vii)	0.11	0.148	0.407	0.335
(viii)	0.284	0.201	0.298	0.217
(ix)	0.06	0.206	0.467	0.267
(x)	0.235	0.22	0.286	0.259
Average importance	0.1687	0.1944	0.4141	0.229
Normalized importance (%)	44.5	48.72	100	56.18
Rank	4	3	1	2

Note(s): NN = Neural network. HRM = Human resource management. JC = Job crafting. PO = Psychological ownership. OCB = Organizational citizenship behavior. EE = Employee engagement

Source(s): Authors' own compilation

5. Discussion

5.1 Key findings and theoretical contributions

This study critically examines the relative effectiveness of top-down (HRM practices) versus bottom-up (job crafting) approaches in promoting employee engagement, addressing ongoing debates about the potential of these strategies. Drawing on social exchange theory (Blau, 1964; Cropanzano and Mitchell, 2005), this study specifically investigates whether job crafting provides more immediate and substantial benefits to employee engagement compared to HRM practices (RQ₁), how psychological ownership and organizational citizenship behavior serve as mediating mechanisms translating these approaches into employee engagement (RQ₂), and whether integrating both approaches represents the most effective strategy for achieving lasting employee engagement (RQ₃). The subsequent paragraphs elaborate upon the key empirical findings derived from these RQs, outline their theoretical implications, and present actionable managerial insights to guide organizations seeking to effectively elevate and sustain employee engagement.

To begin, the *first key finding* of this study indicates that HRM does not exert a significant direct effect on employee engagement, refuting H₁. This finding diverges from prior research suggesting that HRM practices positively drive engagement (Aktar and Pangil, 2018; Sivapragasam and Raya, 2018). A possible reason for the divergence is that HRM practices alone may be perceived by employees as transactional rather than relational, especially if they lack genuine opportunities for personal initiative and involvement, thereby limiting their perceived value as resources employees would feel obligated to reciprocate, consistent with social exchange theory (Blau, 1964; Cropanzano and Mitchell, 2005). Accordingly, the *first theoretical contribution* is that this outcome challenges the widely held assumption that HRM always enhances engagement by highlighting that HRM effectiveness in promoting engagement critically depends on employees' subjective appraisal of HRM practices as meaningful and genuinely supportive (Katou, 2022; Presbitero, 2017). This insight advances ongoing debates regarding the conditions under which HRM interventions fail to secure the positive behaviors they are designed to elicit.

Contrastingly, the *second key finding* confirms that job crafting has a clear, positive relationship with employee engagement, supporting H₂. This observation aligns with earlier work illustrating how employees who personalize their roles tend to experience deeper investment in their day-to-day tasks (Bakker, 2010; Chen et al., 2014). The result also addresses debates on whether bottom-up behaviors provide a more rapid path to engagement compared to conventional, top-down efforts because, as suggested by social exchange theory (Blau, 1964; Cropanzano and Mitchell, 2005), employees view opportunities to craft their roles as valuable resources directly provided by their organizations, thus motivating them to reciprocate immediately through increased engagement. Contrasted with the first major finding—where HRM alone failed to directly influence engagement—this clearly answers RQ₁ by highlighting that job crafting, as a bottom-up approach, delivers more immediate and substantial engagement benefits than top-down HRM practices. Building on this, the *second theoretical contribution* is that these findings expand social exchange theory by illustrating how the perception of organizational support through autonomy and personalized control over work roles directly fosters reciprocal employee engagement.

Building on the above, the *third key finding* demonstrates that HRM can still promote engagement indirectly by fostering psychological ownership, supporting H_{3a}. This finding indicates that HRM practices, when perceived by employees as genuine signals of organizational support rather than transactional gestures, cultivate a sense of personal investment and ownership in their work roles. In line with social exchange theory (Blau, 1964; Cropanzano and Mitchell, 2005), employees who interpret HRM interventions as meaningful investments by their organization feel obligated to reciprocate positively, and psychological ownership provides the psychological mechanism for this reciprocal relationship to occur (Van Dyne and Pierce, 2004). Employees thus respond more deeply and sustainably because they perceive a genuine exchange of support. Consequently, the *third theoretical contribution* is

that these findings specify a condition under which HRM fulfills its potential: HRM-based initiatives must cultivate authentic feelings of ownership rather than mere compliance to generate beneficial attitudinal outcomes. This clarifies why some organizations observe significant gains from HRM while others experience minimal effects, refining social exchange theory by demonstrating that psychological ownership specifically functions as a decisive mediator in facilitating genuine employee reciprocity.

Complementing the above, the *fourth key finding* highlights that job crafting also shapes engagement through psychological ownership, supporting H3b. This result occurs because employees interpret the autonomy to personalize their roles as valuable organizational support, consistent with social exchange theory (Blau, 1964; Cropanzano and Mitchell, 2005). Specifically, when organizations empower employees to craft their tasks, employees perceive this empowerment as a meaningful investment in their autonomy and well-being, prompting them to reciprocate through heightened psychological ownership. Such ownership intensifies employees' personal stakes in their roles, motivating sustained engagement, thereby aligning closely with Wang *et al.*'s (2018) call to explore the underlying motivational mechanisms of job crafting. Drawing on this, the *fourth theoretical contribution* is that this result clarifies precisely why job crafting enhances engagement: feelings of personal possession—fueled by enhanced self-efficacy and deeper belonging—form the psychological conduit through which employees reciprocate organizational investments with stronger, sustained engagement. This refinement enriches the literature on proactive work behavior by explicitly identifying psychological ownership as a key mediator in the job crafting–engagement relationship.

Extending further, the *fifth key finding* indicates that OCB fully mediates the relationship between HRM and engagement, supporting H4a. This finding can be explained through social exchange theory (Blau, 1964; Cropanzano and Mitchell, 2005), which suggests that supportive HR practices, when perceived by employees as genuine acts of organizational goodwill, motivate employees to reciprocate by willingly performing extra-role behaviors beneficial to colleagues and the organization (Halid *et al.*, 2024). Employees engaging in these discretionary behaviors develop stronger social ties, experience a deeper sense of belonging, and perceive a more meaningful connection to their workplace, all of which subsequently enhance their engagement. Extending this logic, the *fifth theoretical contribution* is that OCB emerges as a pivotal mechanism translating HRM inputs into engagement, clarifying that engagement rises specifically when employees interpret their discretionary efforts as a fair reciprocal exchange in response to meaningful organizational support. This mediator enriches prior knowledge by demonstrating that structural HR interventions alone are insufficient to stimulate engagement unless they also encourage voluntary extra-role behaviors based on perceived reciprocity.

Further reinforcing this logic, the *sixth key finding* reveals that OCB partially mediates the link between job crafting and engagement, supporting H4b. This finding aligns with social exchange theory (Blau, 1964; Cropanzano and Mitchell, 2005), suggesting that when employees experience autonomy to reshape their roles, they perceive this autonomy as meaningful organizational support that warrants reciprocation. Employees thus respond by willingly engaging in discretionary behaviors that benefit their colleagues and organization (Magdaleno *et al.*, 2023; Srivastava and Pathak, 2020). These cooperative and supportive actions subsequently create stronger interpersonal bonds and deeper feelings of organizational identification, intensifying their overall engagement. Further clarifying, the *sixth theoretical contribution* is that this result strengthens arguments that bottom-up initiatives such as job crafting not only yield personal benefits but also generate social resources, through OCB, that reinforce engagement at a collective level. Through explicitly demonstrating how autonomy-driven role modifications foster reciprocal extra-role behaviors, this contribution clarifies a critical mechanism by which bottom-up approaches enhance employee engagement beyond the capabilities of the traditional, top-down counterparts.

Finally, the *seventh key finding* stems from the ANN, which identifies OCB as the most influential predictor of employee engagement, followed by job crafting, psychological

ownership, and HRM. This result emerges from a sensitivity analysis of the average relative importance of each input neuron, confirming that OCB surpasses other variables in shaping employee engagement. This result aligns closely with social exchange theory (Blau, 1964; Cropanzano and Mitchell, 2005), as it indicates employees' discretionary behaviors strongly reflect perceived reciprocity—when employees willingly perform extra-role actions, they signal a deeper relational connection to their organization, producing a stronger engagement response than formally mandated or routine behaviors. Grounded in this reasoning, the *seventh theoretical contribution* is that the ANN approach, free from linear assumptions, highlights the comparative strength of OCB as a predictor and thus provides empirical validation for the theoretical position that discretionary, voluntary behaviors represent especially potent forms of reciprocation in organizational exchanges. This insight supports the contention that extra-role behaviors—particularly those encouraged by autonomy-driven job crafting—serve as critical drivers of employee engagement. This insight also encourages researchers and practitioners to incorporate data-driven approaches alongside traditional hypothesis-based models, reinforcing the social exchange theory by demonstrating that voluntary, discretionary actions generate the strongest reciprocal responses from employees.

5.2 Managerial implications and recommendations

Building on the theoretical insights outlined above, the *first managerial implication* drawn from these findings is that organizations seeking immediate and tangible improvements in employee engagement should prioritize job crafting initiatives. Unlike HRM practices, which showed no significant direct impact on employee engagement, job crafting directly influences engagement by empowering employees to personalize their tasks and interactions. Practically, managers can achieve this by explicitly providing employees with autonomy to reshape their roles—for instance, by encouraging employees to take ownership of tasks aligned closely with their personal strengths and interests or by allowing flexible task arrangements and self-managed teams. Clearly communicating to employees that such bottom-up initiatives are welcomed and valued will help foster immediate increases in engagement by enhancing their sense of autonomy and intrinsic motivation.

However, the *second managerial implication* emphasizes caution against dismissing HRM practices entirely, as this study has highlighted indirect but meaningful pathways through which HRM can still positively affect employee engagement. Managers should actively leverage HRM interventions by ensuring these practices explicitly nurture psychological ownership and OCB. For example, managers can strengthen psychological ownership by involving employees in meaningful decision-making processes, clearly articulating how employees' roles contribute to organizational success, and openly acknowledging their contributions. Similarly, fostering OCB can be accomplished by establishing fair reward systems that recognize and reward extra-role behaviors, publicly celebrating teamwork and collaborative achievements, and creating structured opportunities for employees to assist colleagues beyond their formal duties. Such actionable steps ensure HRM practices become genuinely supportive rather than superficial, thus translating indirectly into sustained employee engagement.

Lastly, the *third managerial implication* is that organizations seeking to maximize employee engagement in the long run should adopt a hybrid strategy combining both bottom-up and top-down approaches. Given that job crafting yields immediate benefits through autonomy and empowerment, managers might first introduce targeted job crafting opportunities for more experienced and skilled employees who are ready to self-direct their roles. Concurrently, structured HRM practices remain essential, particularly for employees who may not yet possess the confidence, readiness, or skills required for autonomous role modification. Managers can implement phased programs—initially emphasizing autonomy-driven job crafting initiatives among leaders or senior personnel while progressively rolling out supportive HRM systems to equip other employees with the resources, skills, and

confidence needed for future empowerment. This phased and complementary approach ensures sustainable engagement by simultaneously cultivating autonomy, psychological ownership, and OCB across the entire organization.

6. Conclusion

This study critically compared the effectiveness of top-down HRM practices and bottom-up job crafting approaches in promoting employee engagement within the service industry. Given the people-intensive nature of services, ensuring high levels of employee engagement is imperative for organizational performance and sustained competitive advantage. Through an integrated analysis employing both SEM and ANN, this study demonstrated that job crafting directly and immediately enhances employee engagement, whereas HRM practices contribute indirectly through psychological ownership and OCB. Consequently, organizations looking for immediate improvements should prioritize empowering employees to proactively reshape their roles. However, lasting and sustainable employee engagement requires a balanced approach—integrating autonomy-enhancing job crafting initiatives with structured HRM practices strategically designed to cultivate psychological ownership and encourage OCB. Thus, organizations must thoughtfully combine both approaches to fully realize the potential of employee engagement.

While the current study focused on positive employee behavior, future research could also address negative engagement like counterproductive workplace behavior and service failures, as well as the solutions to overcome them such as error management culture (Aggarwal *et al.*, 2024). In addition to examining the employees who engage in OCB, the perceptions of those who receive OCB should be considered, including in a longitudinal context. A multi-level approach incorporating different tiers of employees and their superiors could provide a clearer understanding of the phenomenon. Furthermore, the generalizability of the findings is also limited. As mentioned, the importance of cross-validation on diverse employee groups highlights the need for retesting the model on larger samples and in various cultural contexts in future studies. Moreover, this study utilized self-reported, cross-sectional data in the Indian IT services industry, which constrain the causal inferences that can be made. To widen the scope of this study, comparative analyses between various industries and other countries could be conducted, whereas combining quantitative and qualitative methodologies (Takona, 2024) would offer a more in-depth understanding of how employees perceive their workplace environments across these industries and countries.

References

- Ababneh, O.M.A. (2021), "The impact of organizational culture archetypes on quality performance and total quality management: the role of employee engagement and individual values", *International Journal of Quality and Reliability Management*, Vol. 38 No. 6, pp. 1387-1408, doi: [10.1108/ijqrm-05-2020-0178](https://doi.org/10.1108/ijqrm-05-2020-0178).
- Aggarwal, A., Lim, W.M., Jaisinghani, D. and Nobi, K. (2024), "Driving service-oriented organizational citizenship behavior through error management culture", *The Service Industries Journal*, Vol. 44 Nos 15-16, pp. 1211-1250, doi: [10.1080/02642069.2022.2147160](https://doi.org/10.1080/02642069.2022.2147160).
- Aktar, A. and Pangil, F. (2018), "Mediating role of organizational commitment in the relationship between human resource management practices and employee engagement: does black box stage exist?", *International Journal of Sociology and Social Policy*, Vol. 38 Nos 7/8, pp. 606-636, doi: [10.1108/ijssp-08-2017-0097](https://doi.org/10.1108/ijssp-08-2017-0097).
- Alam, M.J., Ullah, M.S., Islam, M. and Chowdhury, T.A. (2024), "Human resource management practices and employee engagement: the moderating effect of supervisory role", *Cogent Business and Management*, Vol. 11 No. 1, 2318802, doi: [10.1080/23311975.2024.2318802](https://doi.org/10.1080/23311975.2024.2318802).
- Azam, M.S. (2023), "How can we build human resources (HR) that deliver value? A systematic literature review of traditional and transformational HR roles", *Global Business and Organizational Excellence*, Vol. 42 No. 4, pp. 81-92, doi: [10.1002/joe.22191](https://doi.org/10.1002/joe.22191).

- Bai, T., Jia, D., Liu, S. and Shahzad, F. (2024), "Psychological ownership and ambidexterity influence the innovative work behavior and job performance of SME employees: a mediating role of job embeddedness", *Current Psychology*, Vol. 43 No. 16, pp. 14304-14323, doi: [10.1007/s12144-023-05399-y](https://doi.org/10.1007/s12144-023-05399-y).
- Bailey, C. (2022), "Employee engagement: do practitioners care what academics have to say—and should they?", *Human Resource Management Review*, Vol. 32 No. 1, 100589, doi: [10.1016/j.hrmr.2016.12.014](https://doi.org/10.1016/j.hrmr.2016.12.014).
- Bakker, A.B. (2010), "Engagement and job crafting: engaged employees create their own great place to work", in Albrecht, S. (Ed.), *Handbook of Engagement: Perspectives, Issues, Research and Practice*, Edwin Elgar, Northampton, pp. 229-244.
- Bakker, A.B., Demerouti, E. and Sanz-Vergel, A.I. (2014), "Burnout and work engagement: the JD-R approach", *Annual Review of Organizational Psychology and Organizational Behavior*, Vol. 1 No. 1, pp. 389-411, doi: [10.1146/annurev-orgpsych-031413-091235](https://doi.org/10.1146/annurev-orgpsych-031413-091235).
- Baykal, E. and Bayraktar, O. (2022), "Green human resources management: a novel tool to boost work engagement", *Frontiers in Psychology*, Vol. 13, 951963, doi: [10.3389/fpsyg.2022.951963](https://doi.org/10.3389/fpsyg.2022.951963).
- Bhasin, J., Mushtaq, S. and Gupta, S. (2019), "Engaging employees through employer brand: an empirical evidence", *Management and Labour Studies*, Vol. 44 No. 4, pp. 417-432, doi: [10.1177/0258042x19870322](https://doi.org/10.1177/0258042x19870322).
- Birman, N.A., Katz-Navon, T., Vashdi, D. and Hofstetter, H. (2024), "Remotely engaged—the role of job crafting in the change of employees' engagement after an abrupt transition to remote work", *Frontiers in Organizational Psychology*, Vol. 2, 1363859, doi: [10.3389/forgp.2024.1363859](https://doi.org/10.3389/forgp.2024.1363859).
- Björk, J.M., Bolander, P. and Forsman, A.K. (2021), "Bottom-up interventions effective in promoting work engagement: a systematic review and meta-analysis", *Frontiers in Psychology*, Vol. 12, 730421, doi: [10.3389/fpsyg.2021.730421](https://doi.org/10.3389/fpsyg.2021.730421).
- Blau, P.M. (1964), *Exchange and Power in Social Life*, John Wiley & Sons, New York.
- Bolino, M.C., Klotz, A.C. and Whitney, J.M. (2024), "The origin, evolution, and future of organizational citizenship behavior", *Academy of Management Collections*, Vol. 3 No. 3, pp. 35-56, doi: [10.5465/amc.2023.0002](https://doi.org/10.5465/amc.2023.0002).
- Boonsiritomachai, W., Sud-On, P. and Sudharatana, Y. (2022), "The effect of psychological ownership on organisational commitment", *Kasetsart Journal of Social Sciences*, Vol. 43 No. 2, pp. 523-530.
- Byrne, Z.S. (2022), *Understanding Employee Engagement: Theory, Research, and Practice*, Routledge, New York.
- Carter, K.M., Harman, D.M., Walter, S.L. and Gruca, T.S. (2021), "Relationship of immediate workspace and environmental workplace with organizational citizenship behaviors", *Journal of Managerial Psychology*, Vol. 36 No. 4, pp. 310-326, doi: [10.1108/jmp-09-2019-0539](https://doi.org/10.1108/jmp-09-2019-0539).
- Chandni, S. and Rahman, Z. (2020), "Customer engagement and employee engagement: systematic review and future directions", *The Service Industries Journal*, Vol. 40 Nos 13-14, pp. 932-959, doi: [10.1080/02642069.2020.1733534](https://doi.org/10.1080/02642069.2020.1733534).
- Chen, C.Y., Yen, C.H. and Tsai, F.C. (2014), "Job crafting and job engagement: the mediating role of person-job fit", *International Journal of Hospitality Management*, Vol. 37, pp. 21-28, doi: [10.1016/j.ijhm.2013.10.006](https://doi.org/10.1016/j.ijhm.2013.10.006).
- Cohen, J. (1988), *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed., Lawrence Erlbaum, NJ.
- Cropanzano, R. and Mitchell, M.S. (2005), "Social exchange theory: an interdisciplinary review", *Journal of Management*, Vol. 31 No. 6, pp. 874-900, doi: [10.1177/0149206305279602](https://doi.org/10.1177/0149206305279602).
- Dai, Y.D., Zhuang, W.L., Lu, S.C. and Huan, T.C. (2021), "Work engagement or job burnout? Psychological ownership amongst the employees of international tourist hotels", *Tourism Review*, Vol. 76 No. 6, pp. 1243-1259, doi: [10.1108/tr-03-2020-0087](https://doi.org/10.1108/tr-03-2020-0087).

- Davis, A.S. and Van der Heijden, B.I. (2024), "Too-much-of-a-good-thing? Is employee engagement always constructive and disengagement always destructive?", *Management Decision*, Vol. 62 No. 6, pp. 1950-1976, doi: [10.1108/md-04-2023-0607](https://doi.org/10.1108/md-04-2023-0607).
- Doden, W., Bindl, U. and Unger, D. (2024), "Does it take two to tango? Combined effects of relational job crafting and job design on energy and performance", *Journal of Organizational Behavior*, Vol. 45 No. 8, pp. 1189-1207, doi: [10.1002/job.2820](https://doi.org/10.1002/job.2820).
- Ereerdi, C., Nurgabdeshev, A., Kozhakhmet, S., Rofcanin, Y. and Demirbag, M. (2022), "International HRM in the context of uncertainty and crisis: a systematic review of literature (2000-2018)", *The International Journal of Human Resource Management*, Vol. 33 No. 12, pp. 2503-2540, doi: [10.1080/09585192.2020.1863247](https://doi.org/10.1080/09585192.2020.1863247).
- Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50, doi: [10.2307/3151312](https://doi.org/10.2307/3151312).
- Freeman, R.E. (1984), *Strategic Management: A Stakeholder Approach*, Pitman Publishing, Boston, MA.
- Ghazzawi, R., Bender, M., Daouk-Öyry, L., van de Vijver, F.J. and Chasiotis, A. (2021), "Job crafting mediates the relation between creativity, personality, job autonomy and well-being in Lebanese nurses", *Journal of Nursing Management*, Vol. 29 No. 7, pp. 2163-2174, doi: [10.1111/jonm.13357](https://doi.org/10.1111/jonm.13357).
- Goyal, K., Nigam, A. and Goyal, N. (2024a), "Employee engagement index: a graph-theoretic matrix approach", *Global Business and Organizational Excellence*, Vol. 43 No. 5, pp. 35-55, doi: [10.1002/joe.22253](https://doi.org/10.1002/joe.22253).
- Goyal, K., Nigam, A. and Goyal, N. (2024b), "The influence of psychological ownership (PO) and organisational citizenship behaviour (OCB) on employee engagement: the mediating role of perceived organisational support (POS)", *European Management Studies*, Vol. 22 No. 2, pp. 4-27, doi: [10.7172/2956-7602.104.1](https://doi.org/10.7172/2956-7602.104.1).
- Gupta, G. and Basole, A. (2020), "India's information technology industry: prospects for growth and role in structural transformation", *Decision*, Vol. 47 No. 4, pp. 341-361, doi: [10.1007/s40622-020-00269-z](https://doi.org/10.1007/s40622-020-00269-z).
- Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2017), *A Primer on Partial Least Squares Structural Equation Modeling*, 2nd ed., Sage Publications, Thousand Oaks, CA.
- Halid, H., Kee, D.M.H. and Rahim, N.F.A. (2024), "Perceived human resource management practices and intention to stay in private higher education institutions in Malaysia: the role of organizational citizenship behaviour", *Global Business Review*, Vol. 25 No. 1, pp. 162-179, doi: [10.1177/0972150920950906](https://doi.org/10.1177/0972150920950906).
- Han, X., Li, Y. and Li, J. (2024), "Having fun and thriving: the impact of fun human resource practices on employees' autonomous motivation and thriving at work", *Human Resource Management*, Vol. 63 No. 5, pp. 813-828, doi: [10.1002/hrm.22228](https://doi.org/10.1002/hrm.22228).
- Hasan, H., Nikmah, F., Nurbaya, S., Fiermaningsih, N. and Wahyu, E.E. (2021), "A review of employee engagement: empirical studies", *Management Science Letters*, Vol. 11 No. 7, pp. 1969-1978, doi: [10.5267/j.msl.2021.3.013](https://doi.org/10.5267/j.msl.2021.3.013).
- Haykin, S. (2004), "A comprehensive foundation", *Neural Networks*, Vol. 2, p. 41.
- Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), "A new criterion for assessing discriminant validity in variance-based structural equation modeling", *Journal of the Academy of Marketing Science*, Vol. 43 No. 1, pp. 115-135, doi: [10.1007/s11747-014-0403-8](https://doi.org/10.1007/s11747-014-0403-8).
- Hu, B., Stein, A.M., Mao, Y. and Yan, A. (2022), "The influence of human resource management systems on employee job crafting: an integrated content and process approach", *Human Resource Management Journal*, Vol. 32 No. 1, pp. 117-132, doi: [10.1111/1748-8583.12392](https://doi.org/10.1111/1748-8583.12392).
- Jia, Y., Du, J., Shahzad, F. and Khan, I. (2024), "Unleashing the potential of digitalization: the nexus of psychological needs, enjoyment, volition, engagement and training and development for local government workplace transformation", *Current Psychology*, Vol. 43 No. 34, pp. 27915-27929, doi: [10.1007/s12144-024-06374-x](https://doi.org/10.1007/s12144-024-06374-x).

- Jing, J. and Yan, J. (2022), "Study on the effect of employees' perceived organizational support, psychological ownership, and turnover intention: a case of China's employee", *International Journal of Environmental Research and Public Health*, Vol. 19 No. 10, 6016, doi: [10.3390/ijerph19106016](https://doi.org/10.3390/ijerph19106016).
- Johar, E.R., Rosli, N., Juhari, N.F., Khairi, S.M.M. and Nor, N.M. (2024), "Driving employee engagement: examining the synergy of ability, motivation, and opportunity-enhancing practices", *European Journal of Sustainable Development*, Vol. 13 No. 2, p. 182, doi: [10.14207/ejsd.2024.v13n2p182](https://doi.org/10.14207/ejsd.2024.v13n2p182).
- Jose, G., Nimmi, P.M. and Kuriakose, V. (2024), "HRM practices and employee engagement: role of personal resources—a study among nurses", *International Journal of Productivity and Performance Management*, Vol. 73 No. 1, pp. 1-17, doi: [10.1108/ijppm-04-2021-0212](https://doi.org/10.1108/ijppm-04-2021-0212).
- Katou, A. (2022), "Employee high-performance work systems-experience attributions of well-being and exploitation: a multilevel study of Greek workplaces", *Employee Relations: The International Journal*, Vol. 44 No. 5, pp. 1030-1047, doi: [10.1108/er-06-2021-0230](https://doi.org/10.1108/er-06-2021-0230).
- Kim, J. (2025), "Interrelations of broad-based employee stock compensation, organisational justice perception, and psychological ownership", *International Review of Applied Economics*, ahead-of-print, doi: [10.1080/02692171.2024.2406357](https://doi.org/10.1080/02692171.2024.2406357).
- Leana, C., Appelbaum, E. and Shevchuk, I. (2009), "Work process and quality of care in early childhood education: the role of job crafting", *Academy of Management Journal*, Vol. 52 No. 6, pp. 1169-1192, doi: [10.5465/amj.2009.47084651](https://doi.org/10.5465/amj.2009.47084651).
- Lee, K. and Allen, N.J. (2002), "Organizational citizenship behavior and workplace deviance: the role of affect and cognitions", *Journal of Applied Psychology*, Vol. 87 No. 1, pp. 131-142, doi: [10.1037/0021-9010.87.1.131](https://doi.org/10.1037/0021-9010.87.1.131).
- Lee, S.H., Hur, W.M. and Shin, Y. (2023), "Struggling to stay engaged during adversity: a daily investigation of frontline service employees' job insecurity and the moderating role of ethical leader behavior", *Journal of Business Ethics*, Vol. 184 No. 1, pp. 281-295, doi: [10.1007/s10551-022-05140-y](https://doi.org/10.1007/s10551-022-05140-y).
- Letona-Ibañez, O., Martínez-Rodríguez, S., Ortiz-Marques, N., Carrasco, M. and Amillano, A. (2021), "Job crafting and work engagement: the mediating role of work meaning", *International Journal of Environmental Research and Public Health*, Vol. 18 No. 10, 5383, doi: [10.3390/ijerph18105383](https://doi.org/10.3390/ijerph18105383).
- Li, S., Jia, R., Seufert, J.H., Hu, W. and Luo, J. (2022), "The impact of ability-, motivation-and opportunity-enhancing strategic human resource management on performance: the mediating roles of emotional capability and intellectual capital", *Asia Pacific Journal of Human Resources*, Vol. 60 No. 3, pp. 453-478, doi: [10.1111/1744-7941.12293](https://doi.org/10.1111/1744-7941.12293).
- Lim, W.M. (2025), "What is quantitative research? an overview and guidelines", *Australasian Marketing Journal*, ahead-of-print, doi: [10.1177/14413582241264622](https://doi.org/10.1177/14413582241264622).
- Mach, M., Abrantes, A.C.M. and Alvarado, J.R. (2025), "The role of perceived human resource management practices in organizational citizenship behaviors: evidence from the healthcare sector", *Employee Relations: The International Journal*, Vol. 47 No. 1, pp. 127-147, doi: [10.1108/er-07-2023-0386](https://doi.org/10.1108/er-07-2023-0386).
- Magdaleno, J., Caballer, A., Sora, B., García-Buades, M.E. and Rodríguez, I. (2023), "The mediating role of job crafting of social resources in the relationship between job autonomy, self-efficacy, and organizational citizenship behavior", *Employee Responsibilities and Rights Journal*, Vol. 35 No. 1, pp. 95-110, doi: [10.1007/s10672-022-09402-9](https://doi.org/10.1007/s10672-022-09402-9).
- Mahendramohan, B., Kannabiran, G. and Sridevi, P. (2023), "Antecedents of Indian information technology service organisations moving up the value chain: a mediation model", *International Journal of Business Excellence*, Vol. 30 No. 4, pp. 507-531, doi: [10.1504/ijbex.2023.133496](https://doi.org/10.1504/ijbex.2023.133496).
- Mehralian, G., Moradi, M. and Babapour, J. (2021), "How do high-performance work systems affect innovation performance? The organizational learning perspective", *Personnel Review*, Vol. 51 No. 9, pp. 2081-2102, doi: [10.1108/pr-08-2020-0617](https://doi.org/10.1108/pr-08-2020-0617).

- Miraglia, M., Cenciotti, R., Alessandri, G. and Borgogni, L. (2017), "Translating self-efficacy in job performance over time: the role of job crafting", *Human Performance*, Vol. 30 No. 5, pp. 254-271, doi: [10.1080/08959285.2017.1373115](https://doi.org/10.1080/08959285.2017.1373115).
- Nadeem, S. and Rahat, H. (2021), "Examining the synergetic impact of ability-motivation-opportunity-enhancing high performance work practices", *Human Performance*, Vol. 34 No. 3, pp. 168-188, doi: [10.1080/08959285.2021.1920021](https://doi.org/10.1080/08959285.2021.1920021).
- Oliveira, L.B.D. and Rocha, J.D.C. (2017), "Work engagement: individual and situational antecedents and its relationship with turnover intention", *Revista Brasileira de Gestão de Negócios*, Vol. 19 No. 65, pp. 415-431, doi: [10.7819/rbgn.v19i64.3373](https://doi.org/10.7819/rbgn.v19i64.3373).
- Organ, D.W. (1988), *Organizational Citizenship Behavior: The Good Soldier Syndrome*, Lexington Books, Lanham, MD.
- Pimenta, S., Duarte, A.P. and Simões, E. (2024), "How socially responsible human resource management fosters work engagement: the role of perceived organizational support and affective organizational commitment", *Social Responsibility Journal*, Vol. 20 No. 2, pp. 326-343.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903, doi: [10.1037/0021-9010.88.5.879](https://doi.org/10.1037/0021-9010.88.5.879).
- Presbitero, A. (2017), "How do changes in human resource management practices influence employee engagement? A longitudinal study in a hotel chain in the Philippines", *Journal of Human Resources in Hospitality and Tourism*, Vol. 16 No. 1, pp. 56-70, doi: [10.1080/15332845.2016.1202061](https://doi.org/10.1080/15332845.2016.1202061).
- Rafiq, M., Farrukh, M., Attiq, S., Shahzad, F. and Khan, I. (2023), "Linking job crafting, innovation performance, and career satisfaction: the mediating role of work engagement", *Work*, Vol. 75 No. 3, pp. 877-886, doi: [10.3233/wor-211363](https://doi.org/10.3233/wor-211363).
- Rashmi, K. and Kataria, A. (2022), "Work-life balance: a systematic literature review and bibliometric analysis", *International Journal of Sociology and Social Policy*, Vol. 42 Nos 11/12, pp. 1028-1065, doi: [10.1108/ijsssp-06-2021-0145](https://doi.org/10.1108/ijsssp-06-2021-0145).
- Roczniewska, M., Rogala, A., Marszałek, M., Hasson, H., Bakker, A.B. and von Schwarz, U.T. (2023), "Job crafting interventions: what works, for whom, why, and in which contexts? Research protocol for a systematic review with coincidence analysis", *Systematic Reviews*, Vol. 12 No. 1, p. 10, doi: [10.1186/s13643-023-02170-z](https://doi.org/10.1186/s13643-023-02170-z).
- Ryan, R.M. and Deci, E.L. (2000), "Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being", *American Psychologist*, Vol. 55 No. 1, pp. 68-78, doi: [10.1037/0003-066x.55.1.68](https://doi.org/10.1037/0003-066x.55.1.68).
- Saks, A.M. (2022), "Caring human resources management and employee engagement", *Human Resource Management Review*, Vol. 32 No. 3, 100835, doi: [10.1016/j.hrmr.2021.100835](https://doi.org/10.1016/j.hrmr.2021.100835).
- Salvador-Gómez, A., Bou-Llusar, J.C. and Beltrán-Martín, I. (2023), "A multi-actor perspective on the effectiveness of human resource management implementation: an empirical analysis based on the ability-motivation-opportunity framework", *The International Journal of Human Resource Management*, Vol. 34 No. 20, pp. 3963-4002, doi: [10.1080/09585192.2022.2163855](https://doi.org/10.1080/09585192.2022.2163855).
- Sarstedt, M., Ringle, C.M. and Hair, J.F. (2022), "Partial least squares structural equation modeling", in Homburg, C., Klarmann, M. and Vomberg, A. (Eds), *Handbook of Market Research*, Springer International Publishing, Cham, pp. 587-632.
- Schaufeli, W.B., Bakker, A.B. and Salanova, M. (2006), "The measurement of work engagement with a short questionnaire: a cross-national study", *Educational and Psychological Measurement*, Vol. 66 No. 4, pp. 701-716, doi: [10.1177/0013164405282471](https://doi.org/10.1177/0013164405282471).
- Shahzad, F., Xiu, G., Khan, M.A.S. and Shahbaz, M. (2020), "Predicting the adoption of a mobile government security response system from the user's perspective: an application of the artificial neural network approach", *Technology in Society*, Vol. 62, 101278, doi: [10.1016/j.techsoc.2020.101278](https://doi.org/10.1016/j.techsoc.2020.101278).

- Shahzad, M.A., Du, J., Junaid, M. and Shahzad, F. (2025), "From green HRM practices to green innovation performance: a mediation-moderation model", *Journal of Environmental Planning and Management*, Vol. 68 No. 5, pp. 1187-1212, doi: [10.1080/09640568.2023.2284656](https://doi.org/10.1080/09640568.2023.2284656).
- Shang, C., Li, D. and Diao, Y. (2021), "How career growth relates to organizational citizenship behavior directed at individuals and the organization", *Social Behavior and Personality: An International Journal*, Vol. 49 No. 10, pp. 1-9, doi: [10.2224/sbp.10736](https://doi.org/10.2224/sbp.10736).
- Shin, I., Hur, W.M. and Kang, S. (2018), "How and when are job crafters engaged at work?", *International Journal of Environmental Research and Public Health*, Vol. 15 No. 10, 2138, doi: [10.3390/ijerph15102138](https://doi.org/10.3390/ijerph15102138).
- Showkat, S., Ahmad, S.M. and Sindakis, S. (2024), "Talent management and organizational citizenship behavior in a developing market: an analysis of the Indian telecommunications sector", *Journal of the Knowledge Economy*, Vol. 15 No. 3, pp. 14339-14359, doi: [10.1007/s13132-023-01580-7](https://doi.org/10.1007/s13132-023-01580-7).
- Sivapragasam, P. and Raya, R.P. (2018), "HRM and employee engagement link: mediating role of employee well-being", *Global Business Review*, Vol. 19 No. 1, pp. 147-161, doi: [10.1177/0972150917713369](https://doi.org/10.1177/0972150917713369).
- Srivastava, S. and Pathak, D. (2020), "The role of moderators in linking job crafting to organizational citizenship behaviour: a study on the Indian hospitality sector", *Vision*, Vol. 24 No. 1, pp. 101-112, doi: [10.1177/0972262919869747](https://doi.org/10.1177/0972262919869747).
- Statista (2025), "IT outsourcing: India", Statista, available at: <https://www.statista.com/outlook/tmo/it-services/it-outsourcing/india>
- Szöts-Kováts, K. and Kiss, C. (2023), "How job crafting is related to the individual readiness to organizational change", *Heliyon*, Vol. 9 No. 4, e15025, doi: [10.1016/j.heliyon.2023.e15025](https://doi.org/10.1016/j.heliyon.2023.e15025).
- Takona, J.P. (2024), "Research design: qualitative, quantitative, and mixed methods approaches", *Quality and Quantity*, Vol. 58 No. 1, pp. 1011-1013, doi: [10.1007/s11135-023-01798-2](https://doi.org/10.1007/s11135-023-01798-2).
- Tims, M., Bakker, A.B. and Derks, D. (2015), "Job crafting and job performance: a longitudinal study", *European Journal of Work and Organizational Psychology*, Vol. 24 No. 6, pp. 914-928, doi: [10.1080/1359432x.2014.969245](https://doi.org/10.1080/1359432x.2014.969245).
- Tims, M., Twemlow, M. and Fong, C.Y.M. (2022), "A state-of-the-art overview of job-crafting research: current trends and future research directions", *Career Development International*, Vol. 27 No. 1, pp. 54-78, doi: [10.1108/cdi-08-2021-0216](https://doi.org/10.1108/cdi-08-2021-0216).
- Urbini, F., Chirumbolo, A., Giorgi, G., Caracuzzo, E. and Callea, A. (2021), "HRM practices and work engagement relationship: differences concerning individual adaptability", *Sustainability*, Vol. 13 No. 19, 10666, doi: [10.3390/su131910666](https://doi.org/10.3390/su131910666).
- Van Dyne, L. and Pierce, J.L. (2004), "Psychological ownership and feelings of possession: three field studies predicting employee attitudes and organizational citizenship behavior", *Journal of Organizational Behavior*, Vol. 25 No. 4, pp. 439-459, doi: [10.1002/job.249](https://doi.org/10.1002/job.249).
- Vargas-Hernandez, J.G. and González-Ávila, F.J. (2025), "Organizational citizenship behavior: enhancing workplace dynamics", in Marcão, R. and Santos, V. (Eds), *Evolving Strategies for Organizational Management and Performance Evaluation*, IGI Global, PA, pp. 445-462.
- Verkuyten, M. (2025), "'Ours': understanding collective psychological ownership", *The Journal of Psychology*, ahead-of-print, doi: [10.1080/00223980.2024.2414286](https://doi.org/10.1080/00223980.2024.2414286).
- Wang, H.J., Demerouti, E., Blanc, P.L. and Lu, C.Q. (2018), "Crafting a job in 'tough times': when being proactive is positively related to work attachment", *Journal of Occupational and Organizational Psychology*, Vol. 91 No. 3, pp. 569-590, doi: [10.1111/joop.12218](https://doi.org/10.1111/joop.12218).
- Wilson, R.D. and Bettis-Outland, H. (2020), "Can artificial neural network models be used to improve the analysis of B2B marketing research data?", *Journal of Business and Industrial Marketing*, Vol. 35 No. 3, pp. 495-507, doi: [10.1108/jbim-01-2019-0060](https://doi.org/10.1108/jbim-01-2019-0060).
- Wittenberg, H., Eweje, G., Taskin, N. and Forsyth, D. (2024), "Different perspectives on engagement, where to from here? A systematic literature review", *International Journal of Management Reviews*, Vol. 26 No. 3, pp. 410-434, doi: [10.1111/ijmr.12361](https://doi.org/10.1111/ijmr.12361).

-
- Yalenios, J. and d'Armagnac, S. (2023), "Work transformation and the HR ecosystem dynamics: a longitudinal case study of HRM disruption in the era of the 4th industrial revolution", *Human Resource Management*, Vol. 62 No. 1, pp. 55-77, doi: [10.1002/hrm.22114](https://doi.org/10.1002/hrm.22114).
- Zhang, Y., Liu, G., Zhang, L., Xu, S. and Cheung, M.W.L. (2021), "Psychological ownership: a meta-analysis and comparison of multiple forms of attachment in the workplace", *Journal of Management*, Vol. 47 No. 3, pp. 745-770, doi: [10.1177/0149206320917195](https://doi.org/10.1177/0149206320917195).

Corresponding author

Weng Marc Lim can be contacted at: lim@wengmarc.com