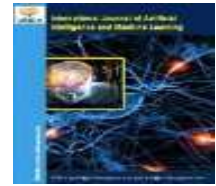




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AI-Driven Job Crafting: The Role of Challenge Appraisal and Organizational Support

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ABSTRACT

This research investigates the underlying mechanisms and contextual factors influencing employees' promotion-focused job crafting as a strategy to mitigate the effects of organizational artificial intelligence (AI) adoption, framed within the cognitive evaluation theory of stress and resource conservation theory. Utilizing a sample of 232 employees, the findings indicate a positive correlation between organizational AI adoption and the perception of challenges, with organizational support serving to reinforce this affirmative association, thereby impacting the employees' engagement in promotion-focused job crafting behaviors. This research elucidates the motivations and contextual determinants that drive employees to adopt promotion-focused job crafting in response to organizational AI adoption, thereby contributing to the body of knowledge surrounding the antecedent mechanisms of job crafting. Additionally, it offers recommendations for organizations to facilitate employees' job crafting initiatives through an evaluative lens.

Keywords: Organizational AI adoption; Challenging appraisal; Promotion-focused job crafting; Organizational support

Introduction

The rapid advancement of artificial intelligence (AI) is driving substantial transformations across multiple sectors, enhancing productivity and reducing costs for corporations [1,2]. In the service industry, AI-powered chatbots and virtual assistants are improving customer service [3]; in education, AI is facilitating automated evaluations of student performance [4]; and in finance, AI algorithms inform investment decisions and optimize risk management [5]. Despite these applications, the study of organizational AI adoption remains limited, particularly regarding its influence on employee job outcomes [6]. AI, often considered the catalyst of the Fourth Industrial Revolution, is set to reshape various industries, especially the service sector [7]. While AI can streamline tasks and enhance productivity for employees, it also introduces potential stressors, such as job insecurity and anxiety about machine replacement [1]. Research suggests a significant link between AI adoption and job-related outcomes like turnover intentions [8], highlighting the importance of understanding AI's broader implications on employee well-being and workplace dynamics.

With the widespread adoption of artificial intelligence (AI) in organizations, employees face a dynamic work environment marked by uncertainty and complexity [9]. In response to such transformations, employees may engage in job crafting—a proactive process in which they reshape their tasks and roles to better align with their needs and goals [10]. Job crafting has drawn significant scholarly interest for its impact on motivation, health, and performance [11], and for its potential to enhance adaptability, a key factor in organizational sustainability [12]. AI's influence on work tasks and career trajectories introduces new considerations for job crafting, as employees may adopt various strategies to manage changing roles. For instance, promotion-focused job crafting involves seeking new challenges and resources to pursue personal advancement [13]. Although job crafting can bolster employees' sense of meaning, perceived employability, and adaptive performance [14], certain strategies may increase burnout and reduce well-being [15]. This highlights the importance of understanding how AI-driven organizational changes may shape employees' job crafting behavior.

Therefore, the purpose of this study is to address these knowledge deficiencies by examining the impact of organizational AI adoption on promotion-focused job crafting, using the transactional theory of stress and resource conservation theory as a framework. As a typical work environment changes, organizational AI adoption can induce job insecurity, which is a primary stressor [16]. As suggested by the transactional theory, employees may evaluate this stressor as a challenge and engage in corresponding coping behavior [17]. Furthermore, based on the resource conservation theory, the acquisition and preservation of resources are

important strategies for coping with work stress, and organizational support, as an effective means for employees to obtain resources in their work, plays an important moderating role in the relationship between AI adoption and job crafting. This study adds several theoretical insights to the existing literature. First, it examines the effect of organizational AI adoption on employees' job crafting and unravels an underlying mediation mechanism enriching AI-related research in the organizational behavior field. Second, it contributes to the job crafting literature by recognizing organizational AI adoption as a significant determinant.

Research Hypotheses

AI adoption

Artificial Intelligence (AI) pertains to sophisticated machines or computational systems that exhibit the capability to learn, react, and execute a variety of tasks analogous to human behavior [18]. Current academic inquiries into AI have predominantly concentrated on information technology methodologies [19], whereas researchers within the domain of management exhibit heightened interest in the dynamics of AI adoption and acceptance. A comprehensive examination of the existing literature on AI adoption reveals research trajectories pertinent to the current analysis. The research stream delves into the determinants of employee acceptance of AI technologies. The clarity regarding the delineation of roles between employees and AI, coupled with employees' motivation and capability to engage with AI-based technologies [20], organizational culture [21], and indications of responsible AI practices [22] serve to augment employee acceptance of AI, whereas factors such as job insecurity [21] are found to diminish such acceptance. The other research trajectory, which focuses on the adoption of AI within organizational contexts, has garnered comparatively less scholarly attention. Prior investigations within this stream have predominantly explored the impact of organizational AI adoption on customer-related outcomes, encompassing engagement, satisfaction, and loyalty [23]. Nonetheless, the adoption of AI at the organizational level, which alters the work environment and job responsibilities for employees, inevitably affects various employee outcomes. However, despite a limited number of studies indicating that organizational AI adoption influences specific employee outcomes, such as turnover intention and job engagement [16], scholarly inquiry from the perspective of employees remains insufficiently developed [24].

Challenge appraisal as mediator

Cognitive evaluation of an individual's awareness on AI adoption will also affect his job crafting behavior. When confronted with the adoption of artificial intelligence within organizational contexts, a potential stressor [16], employees often evaluate it as a challenge they are capable of surmounting to achieve rewards and accomplishments. A challenge appraisal signifies that employees perceive a stressor as a mechanism for enhancing their competencies and expediting their successes, thereby eliciting positive emotional responses and fostering a desire to learn [25]. If employees interpret the organizational adoption of AI as a challenge and a prospective opportunity for future advantages and advancement, they are predisposed to address the existing situation in a proactive manner. Furthermore, challenge appraisals can stimulate employees' intrinsic motivation and promote their engagement in activities that are beneficial to their professional development, such as innovation [26]. Thus, when perceiving a challenge, employees are inclined to employ promotion-focused coping strategies, such as augmenting their job resources and embracing demanding job responsibilities, commonly referred to as promotion-focused job crafting, to achieve optimal job characteristics and outcomes [13].

H1: Organizational AI adoption enhances promotion-focused job crafting, mediated by challenge appraisal.

Organizational support as moderator

The organizational support refers to employees' perception of how the organization views their contributions and cares about and nurtures them, which can provide employees with important material and psychological resources to cope with work stress [27]. This study believes that organizational support can create a good working atmosphere for employees under the organizational AI adoption, so as to alleviate the negative impact caused by work stress. Studies have shown that individuals with high-level organizational support are more likely to feel appreciated, recognized and affirmed by the organization, thus increasing their sense of competence and building confidence in achieving goals [28]. When faced with work pressure, they are more likely to positively attribute it and evaluate it as an opportunity to gain benefits and achieve work goals, and have more confidence to invest individual resources to cope with losses caused by stressors. Therefore, with a high level of organizational support, the positive relationship between organizational AI adoption and employee challenging appraisal will be more significant, thus promoting promotion-focused job crafting. On the contrary, with a low level of organizational support, employees are more inclined to maliciously attribute the pressure brought by the organizational AI adoption, believing that it affects their career planning and poses a threat to their jobs, which seriously endangers their well-being.

H2a: Organizational support moderates the association between AI awareness and challenging appraisal such that the association will be more positive under conditions of higher organizational support.

H2b: Employees with high levels of organizational support are more likely to make challenging appraisal of AI awareness and promote their job crafting.

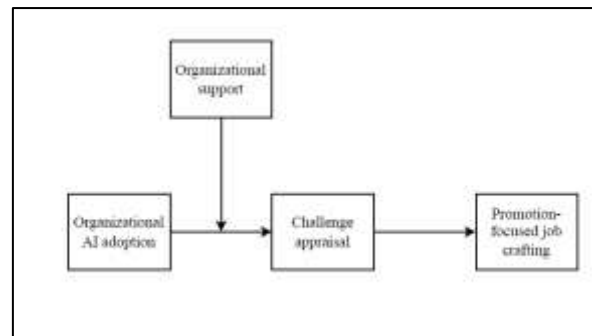


Figure 1. Conceptual model

Data and Method

Sample

Our sample consisted of employees from manufacturing and production enterprises in Haryana that have extensively adopted AI technology. A total of 255 questionnaires were initially collected through an online survey. After excluding invalid responses due to incomplete answers or other issues, 232 valid questionnaires were ultimately obtained for analysis.

Measure

The study utilized well-established scales developed by international scholars, each employing a 5-point Likert scale. Respondents rated each item from 1 (strongly disagree) to 5 (strongly agree). Table 1 presents the Cronbach's alpha coefficients for measures utilized in the study.

Organizational AI adoption. Organizational AI adoption was measured with a three-item scale adapted from Wang et al. [29]. A sample item is "My company has been involved in the adoption of AI technology."

Challenge appraisals. We adopted an eight-item scale from Searle and Auton [30] to measure challenge appraisals. A sample item for challenge appraisal is, "The adoption of AI in my company shows me I can do something new."

Promotion-focused job crafting. We adopted 16 items from Bindl et al. [31] to measure promotion-focused job crafting, which contains 16 items. A sample item is, "This employee added complexity to his/her tasks by changing the structure or sequence."

Organizational Support: The 8-item scale developed by Eisenberger et al. [32] was used. An example item is: "When I have difficulties, the organization will help me."

Control variables: Control variables included the respondents' gender, age, education, and tenure.

Data analysis and results

Confirmatory Factor Analysis

In the present investigation, MPLUS 8.3 was employed to execute confirmatory factor analysis on the constructs of organizational AI adoption, challenging appraisal, promotion-focused job crafting, and organizational support scales to ascertain the validity of each construct. As illustrated in Table 1. In comparison to alternative models, the four-factor model demonstrates the most favorable fitting characteristics, thereby indicating that the four-factor constructs possess robust validity.

TABLE 1

Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
Four-factor	2740.352	734	3.733	0.085	0.812	0.789	0.099
Three-factor a	3700.213	775	4.774	0.097	0.743	0.726	0.120
Two-factor b	4900.218	780	6.282	0.109	0.715	0.696	0.127
Single-factor c	6300.442	780	8.081	0.145	0.498	0.463	0.134

Note: N=232, a combining promotion-focused job crafting and organizational support, b combining challenge appraisal, promotion-focused job crafting and organizational support, c combining all variables

Descriptive statistics

Table 2 presents the mean, standard deviation, and correlation coefficients for each variable. Organizational AI adoption shows a significantly positive correlation with challenging appraisal. Challenging appraisal is significantly positively correlated with promotion-focused job crafting. These findings align with research expectations and provide a foundation for further hypothesis testing.

TABLE 2

variable	MS	D	1	2	3	4	5	6	7	8
1. Gender	1.53	0.5								
2. Age	2.13	0.97	-0.03							
3. Education	5.11	0.76	0.08	-0.51						
4. Organizational tenure	2.62	1.23	0.04	0.829	-0.70					
5. AI adoption	3.49	0.29	-0.15	0.07	0.07	0.02	(0.84)			
6. Organization support	4.24	0.44	0.01	0.16	-0.12	0.13	0.31	(0.82)		
7. Challenge appraisal	4.24	0.23	0.03	0.15	0.17	0.10	0.25	0.14	(0.79)	
8. Job crafting	3.47	0.49	0.02	0.23	0.13	0.09	0.19	0.29	0.34	(0.85)

Hypotheses testing

This study adopts Mplus 8.3 to test the hypotheses. The organizational AI adoption has a significant positive impact on employees' promotion-focused job crafting behavior ($\beta = 0.26$, $P < 0.01$). The organization AI adoption positively affects challenging appraisal ($\beta = 0.42$, $P < 0.001$). The challenging appraisal, as a predictor, positively affects the outcome variable of job crafting ($\beta = 0.47$, $P < 0.001$). Therefore, challenging appraisal plays the mediating role between the organization AI adoption and employees' promotion-focused job crafting. Based on the above analysis results, Hypothesis 1 is supported.

The interaction between organization AI adoption and organizational support has a significant positive impact on challenging appraisal ($\beta = 0.85$, $P < 0.001$). As shown in Fig. 2, under the effect of high-level organizational support (mean value plus one standard deviation), the positive effect of AI awareness on challenging appraisal is more pronounced, and hypothesis H2a is supported.

To further verify the moderated mediation effect, this study employed the Bootstrap method ($N = 5000$) for statistical analysis. When the level of organizational support is high, the indirect effect of organization AI adoption on promotion-focused job crafting through challenging appraisal is significant ($b = 0.34$, $95\%CI = [0.18, 0.53]$). Organizational support moderates the mediation of challenging appraisal in the relationship between AI awareness and employees' job crafting, and Hypothesis H2b is supported.

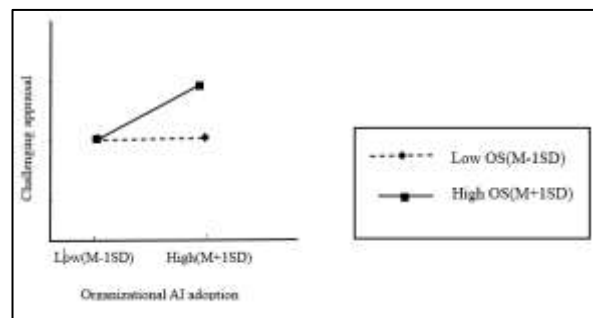


Figure 2. Moderating effect

Conclusion

Theoretical implications

First, this investigation delves into the ramifications of artificial intelligence (AI) adoption on the phenomenon of promotion-focused job crafting through the lenses of challenging appraisals, within the organizational domain pertaining to AI advancements. This aligns with the findings of Liang et al. [19], which elaborate on the influence of AI evolution on employee work performance. Specifically, while the progression and utilization of AI technologies may instigate employment uncertainties for workers, conversely, it may also serve as a catalyst for them to elevate their competencies. Second, grounded in the cognitive evaluation theory of stress, this study scrutinizes the effects of AI adoption on promotion-focused job crafting by elucidating the mediating mechanism that exist between AI adoption and employee promotion-focused job crafting behaviors. In this context, challenging appraisal assume pivotal mediating function between AI adoption and promotion-focused job crafting activities. Given the influence of AI, employees are compelled to perpetually acclimatize to novel work settings and technological demands, which, in turn, incites them to engage in job crafting, thereby unveiling new attributes and trends in job crafting within the realm of emergent technologies. Third, this research extends the application of cognitive evaluation theory of stress within the organizational research landscape, offering significant theoretical substantiation for the cognitive

appraisal of stress. Unlike the majority of preceding organizational studies that concentrated predominantly on stressors rather than the evaluation of such stressors, this investigation employs the cognitive evaluation theory of stress to illustrate the crucial importance of stress appraisal in the decision-making processes related to job crafting. It underscores the imperative of prioritizing stress evaluations over the stressors themselves, thereby further augmenting the comprehensive application of the cognitive evaluation theory of stress.

Practical implications

First, it is imperative to instruct employees on accurately comprehending the implications of artificial intelligence (AI) technology while simultaneously enhancing their capabilities in stress regulation. The identical awareness of AI's impact may elicit varying cognitive assessments among employees, consequently resulting in a spectrum of coping behavior strategies. Therefore, it is essential for leaders to grasp employees' perceptions and emotional responses regarding organizational transformations, facilitate their capacity to effectively confront the challenges presented by AI technology, and encourage their engagement in job crafting practices. Second, employees ought to embrace a dialectical approach towards the evolution of AI technology. They should proactively pursue the latest advancements in AI, reflect on methods to incorporate these innovations into their work to optimize efficiency or explore novel occupational domains, and formulate educational plans to consistently refresh their knowledge base and remain aligned with industry advancements. Lastly, it is crucial to bolster organizational support to alleviate the detrimental effects associated with awareness of AI's impact. Organizations should articulate the objectives of technological transformation to employees, actively advocate for the new opportunities that AI technology affords them, and provide assistance in their endeavors for self-enhancement.

Limitations and future research

First, this investigation exclusively utilizes cross-sectional data gathered at a singular temporal juncture to analyze the influence of organizational AI adoption, challenging appraisal, and organizational support on promotion-focused job crafting, while not adequately acknowledging that the variables in question and their interrelationships may undergo changes over time. In subsequent inquiries, an initiative could be undertaken to amass longitudinal data to more distinctly and persuasively elucidate the correlation between organizational AI adoption and promotion-focused job crafting. Second, limited by practical research constraints, the data employed in this analysis are entirely self-reported by employees, which introduces a potential common method bias. Consequently, future investigations could enhance the research framework to procure data through more stringent methodologies. Third, this study predominantly concentrates on promotion-focused job crafting. Longitudinal studies could monitor and survey participants to investigate the enduring impacts of AI adoption on employees' job crafting behavior.

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