

Article

Work Engagement, Job Crafting, and Their Effects on Green Work Outcomes

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Abstract

The present study examines the effect of work engagement (WENG) on task-related pro-environmental behavior (TPEB) and green creativity, with job crafting as a mediator. Based on data collected from 187 customer-contact hotel and restaurant employees in the United Kingdom, we employed structural equation modeling to test our hypotheses. The findings from a time-lagged survey study denote that WENG fosters employees' job crafting, while job crafting boosts their TPEBs and green creativity. Our findings shed light on the relationship between WENG and green outcomes (TPEB and green creativity) through the mediating role of employees' job crafting. The findings highlight that employees high in WENG use their job crafting behaviors that in turn enable them to display TPEBs and green creativity. This empirical piece contributes to the existing knowledge, since there is little research regarding the effects of non-green organizational factors on green work outcomes. The practical and theoretical implications of the findings are subsequently discussed.

Keywords: green creativity; hospitality employees; job crafting; pro-environmental behavior; work engagement



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1. Introduction

In a stiffening competitive marketplace, customer-contact employees (CCEs) who have direct interactions with customers are among the important strategic partners of a firm [1]. They play a vital role in the provision of quality services and accomplishment of customer satisfaction and loyalty [2]. In such a challenging environment, management expects organizational members to be highly work-engaged to achieve service excellence [3]. WENG is "... a positive state of fulfillment that is characterized by vigor, dedication, and absorption" [4]. Work-engaged individuals exert much energy on their jobs, experience a sense of pride and challenge, and concentrate on their jobs [5].

Diverse customer needs and expectations lead to managerial efforts to focus on a bottom-up approach such as job crafting (JC) to match their roles with their skills [6]. Employees high in WENG usually seek continuous improvement and commit to outstanding performance [7]. Such highly committed employees may search for opportunities to craft their jobs to optimize their work environment, adjust their job responsibilities to their needs, stay motivated, and strengthen their work performance [5]. JC, which denotes "... the physical and cognitive changes individuals make in the task or relational boundaries in their work" ([8], p. 179), is a type of proactive behavior in a firm, allowing employees to take control, make adjustments, or act in advance [9].

Workers initiate JC behaviors to shape a job according to their abilities and personal needs to make their work more meaningful and enjoyable [9]. They redesign their jobs by searching for job resources and challenges [9] and altering the social and task components of their jobs [8].

JC, as a bottom-up job design, is critical in the hospitality industry as it enables workers to utilize their resources in an efficient way (e.g., skills) and improve their job performance [10]. WENG is a key factor in understanding how JC behaviors affect performance outcomes [10]. Research demonstrated that WENG or JC influenced work-related consequences such as task performance [5,11].

Recent studies highlighted the role of green-related variables (e.g., green WENG and green crafting) on green performance (e.g., green creativity) [12–14]. However, there is little research that has explored the impacts of non-green organizational factors on green work outcomes [15,16]. Not surprisingly, hospitality and tourism companies need work-engaged employees who can craft their jobs and contribute to organizational performance [17]. Research demonstrated that pro-environmental behaviors in the hospitality industry demanded significant employee involvement [18,19]. In addition, these companies began to invest in environmental sustainability (ES) to gain sustainable competitive advantages [20,21].

1.1. Purpose

In light of the above information, our paper explores JC as a mediator of the impact of WENG on task-related pro-environmental behavior (TPEB) and green creativity. Specifically, our paper gauges the following: (1) the link between WENG and JC; (2) the influence of JC on TPEB and green creativity; and (3) JC as a mediator in the abovementioned links.

TPEB and green creativity are among the critical eco-friendly or green behaviors [13,22,23]. Green creativity denotes "... the development of new ideas about green products, green services, green processes, or green practices that are judged to be original, novel, and useful" ([24], p. 109). Workers' green creativity can stimulate the process of finding solutions to sustainability challenges and therefore mitigate the potential detrimental impact of the hospitality industry on the environment [25,26]. Green creativity is an important concept that promotes sustainable development and green innovation, helping organizations to develop a strong image in the highly competitive environment [27]. Pro-environmental behavior denotes "environmentally responsible, sustainable, and ecological behaviors" ([28], p. 214) with the main goal of minimizing negative impact on the natural environment. Pro-environmental behaviors include reducing energy and water consumption, minimizing waste, recycling, properly sorting waste, supporting organizational green initiatives, and exchanging eco-friendly practices with coworkers [19]. TPEB highlights an employee's fulfillment of tasks in an eco-friendly way [29].

1.2. Contribution

This paper exploring the previously mentioned linkages is relevant and significant. This is because several research gaps remain unaddressed, requiring additional investigation to provide in-depth knowledge within the ES literature. First, the enormous detrimental ecological impact of hospitality industry activities has forced hotels to prioritize environmental performance and shift to "greening" [30]. Initiating green and sustainable development practices fosters resource-efficient production, improves the corporate image, strengthens the brand reputation, and helps gain a competitive advantage [31,32]. In the process of the implementation of ES practices, organizational members are seen as the founding pillars promoting green-related and pro-environmental activities [33]. Management should also invest in green human resource management (HRM) to promote

employee engagement in many tasks or WENG and make them display green outcomes. This is important because green HRM is an effective strategic tool to send strong signals to the stakeholders that management is committed to the protection of the ecological environment [15,34]. Despite this realization, little is known about the green predictors or outcomes of WENG [15,35].

In addition, recent works by [36,37] highlighted the significance of employee involvement in green behaviors for a sustainable hospitality sector. Therefore, hospitality and tourism companies need to have work-engaged employees who can redesign their jobs to support and promote the ES and green initiatives of their companies via TPEB and green creativity. Yet our search in the literature has delineated no evidence about the link between JC and green work outcomes. This is surprising because hospitality and tourism companies cannot achieve their ES goals (e.g., less water consumption, energy conservation, and waste management) if they lack a pool of employees who are not involved in the process [15]. In view of such research lacuna, our paper tests the effect of JC on TPEB and green creativity.

Second, there is evidence that reports JC as the underlying mechanism relating WENG to work outcomes [38]. Moreover, there are few empirical pieces appertaining to the link between WENG and green work outcomes [15,16]. Recent writings have primarily included green crafting as a mediator in the relationship with green creativity and pro-environmental behavior as outcomes by ignoring the general concept of JC [13,39]. Our study answers the research call by [7] by investigating the effect of job crafting on critical outcomes (e.g., green creativity and TPEB). More importantly, there is no evidence pertaining to the impact of JC in the intermediate link between WENG and TPEB and green creativity.

Third, in response to the call of [40] that further research should consider the fact that the relationship between WENG and JC can be reciprocal, this paper tests JC as a mediator of the influence of WENG on the aforementioned green work consequences. Surprisingly, the pertinent literature has not focused much on such reciprocal relationships.

Fourth, most of the empirical pieces on green creativity have utilized data collected in developing countries/emerging economies [2,41]. Less is known about the factors influencing hospitality workers' green creativity in developed countries [20]. Therefore, we gathered data from hotel and restaurant workers in the United Kingdom via Prolific, an online data collection platform.

In closing, the hospitality industry is one of the main energy and water consumers, and management of hospitality companies has started to develop and implement the ES and green initiatives. This makes our research consistent with the "United Nations' Sustainable Development Goals".

2. Theoretical Framework and Hypotheses

Job demands–resources (JD-R) theory is utilized to develop the hypothesis regarding the effect of WENG on JC [5]. JD-R theory contends that all job characteristics can be grouped into job demands and job resources [5]. Job demands denote "... those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs" ([42], p. 312). Job demands may include work overload, emotional job demands, and time pressure [42]. As postulated by the health impairment process, workers who are plagued with job demands experience work-related strain that in turn engenders negative work and nonwork outcomes such as withdrawal cognition and depression [5].

Job resources, which may consist of work social support, performance feedback, and autonomy, mitigate employees' stress, activate their personal growth and development, and enable them to accomplish work-related goals [5]. The motivational process advances

the fact that sufficient job resources foster employees' WENG that in turn culminates in desirable outcomes such job performance [5].

JC is represented by "increasing structural job resources" (structural JRs), "increasing social job resources" (social JRs), "increasing challenging job demands" (challenging JDs), and "reducing hindering job demands" [9]. Organizational members high in WENG may seek support from their supervisors and coworkers to increase their job performance (social JRs) [43]. They may search for an opportunity for development and autonomy in the workplace (structural JRs) [9]. Such workers may also decrease hindering job demands by acting proactively [43]. This is because of the fact that they find these job demands overwhelming [9]. Challenging JDs encourage these workers to develop their skills and knowledge. Therefore, to increase work-related performance, it is important to create an environment where organizational members experience a sufficient level of challenging JDs [9].

There is evidence that JC influences WENG [44]. However, [43] state, "... a reversed causal relationship is equally likely" (p. 1363). They further note that highly work-engaged employees are high in positive affect and display JC behaviors because these workers can amend their job demands and resources by showing behaviors that would allow them to shape the conditions at work and optimize the work environment. This is also in congruence with the precepts of JD-R that motivated or work-engaged employees can utilize their JC behaviors [5]. The work of [45] illustrated that JC activated employees' WENG. Ref. [46] reported that WENG bolstered both individual and collaborative crafting among hotel employees. A study of information technology professionals showed that WENG had a strong positive impact on JC [47]. The research of [17] lent credence to the positive effect of WENG on JC among hotel employees. Recently, research conducted with Spanish employees denoted that job crafting was significantly predicted by WENG [7]. The work of [48] disclosed that WENG predicted hospitality employees' task, relational, and cognitive crafting. Thus, we expect that work-engaged employees will be involved in JC behaviors to craft their jobs based on their abilities and needs.

Hypothesis 1. *WENG positively relates to hospitality employees' JC.*

As JD-R theory proposes, JC is a proactive behavior that enables employees to redesign their jobs by altering resources and demands and thus generating positive behavioral outcomes [5]. For example, ref. [38] demonstrated a positive linkage between JC and job performance. The work of [49] lent support to the positive influence of JC on creative performance. Using the lens of the Minnesota theory of work adjustment, ref. [50] argued that employees are involved in an interactive and continuous process of behavior adjustment in their firm to maintain correspondence with the work environment. Therefore, JC can be treated as an important strategy that enables employees to take action on and shape their work conditions as well as optimize job performance.

We argue that having a pool of hospitality employees who can show proactive behavior to redesign their jobs is important to the achievement of environmental goals. The presence of green HRM practices would be helpful for employees who craft their jobs. Such practices also trigger employees' ecological behaviors. For example, the research of [51] denoted that green HRM practices enhanced hotel employees' eco-friendly behaviors. Likewise, ref. [52] demonstrated a positive association between green HRM and hotel workers' pro-environmental behaviors. Ref. [53] reported that green HRM activated hotel employees' green innovation. The empirical study of [54] revealed that various dimensions of green HRM such as green recruitment and green training and development boosted employees' green behaviors.

Evidence indicated that green crafting fostered tour operators' green creativity [6]. Ref. [13] found that green crafting was a predictor of green creativity among employees in the manufacturing industry. Research also denoted that green crafting activated employees' voluntary pro-environmental behaviors in the textile industry [39]. Employees who really understand the critical role of ES and green initiatives in the success of the hospitality firm will engage in JC behaviors and make amendments in the social and task components of their green jobs. Specifically, such employees will search for advice concerning the protection of the environment, learn new things about green-related issues, and be ready to take on extra green-related tasks to contribute to the hospitality firm's efforts associated with the preservation of the ecological environment. They will also come up with novel green ideas to augment the firm's environmental performance. Under these circumstances, job crafters are likely to display TPEB and green creativity. Thus, we expect JC to bolster hospitality employees' green work consequences.

Hypothesis 2. *JC positively relates to hospitality employees' TPEBs.*

Hypothesis 3. *JC positively relates to hospitality employees' green creativity.*

An investigation of the relevant studies demonstrates limited evidence about JC as a mediator linking WENG to performance outcomes. For example, the study of [38] indicated that JC was a mediator between WENG and job performance. In this paper, it is proposed that organizational members who are work-engaged craft their jobs based on their abilities and needs and therefore perform environmental and green tasks successfully. Although there is evidence regarding the link between WENG and green outcomes [15,16], to our knowledge, there is no empirical piece that has assessed the link between JC and hotel employees' TPEBs and green creativity so far. As advanced by JD-R theory, a supportive work environment makes employees work with intensity, have positive emotions about the job, and devote much energy to the job [5]. Highly work-engaged employees possess personal resources as a coping style. These employees combine these job and personal resources with challenging JDs to craft their jobs for contributing to the hospitality firm's ES and green initiatives. Employees high in WENG craft their jobs via resources as well as challenging JDs and are more likely to consider new responsibilities as meaningful. They may not only focus on job-related tasks but also investigate creative and novel solutions.

The research of [39] illustrated that colleague perceptions toward the environment influenced voluntary pro-environmental behavior through the mediating roles of green creativity and green organizational climate. As a result, they would complete their daily tasks in an eco-friendly way and seek creative solutions to environmental and green problems. Accordingly, we posit that JC is an important underlying mechanism through which WENG influences green work outcomes.

Hypothesis 4. *JC mediates the impact of WENG on hospitality employees' TPEBs.*

Hypothesis 5. *JC mediates the impact of WENG on hospitality employees' green creativity.*

Figure 1 presents the research model.

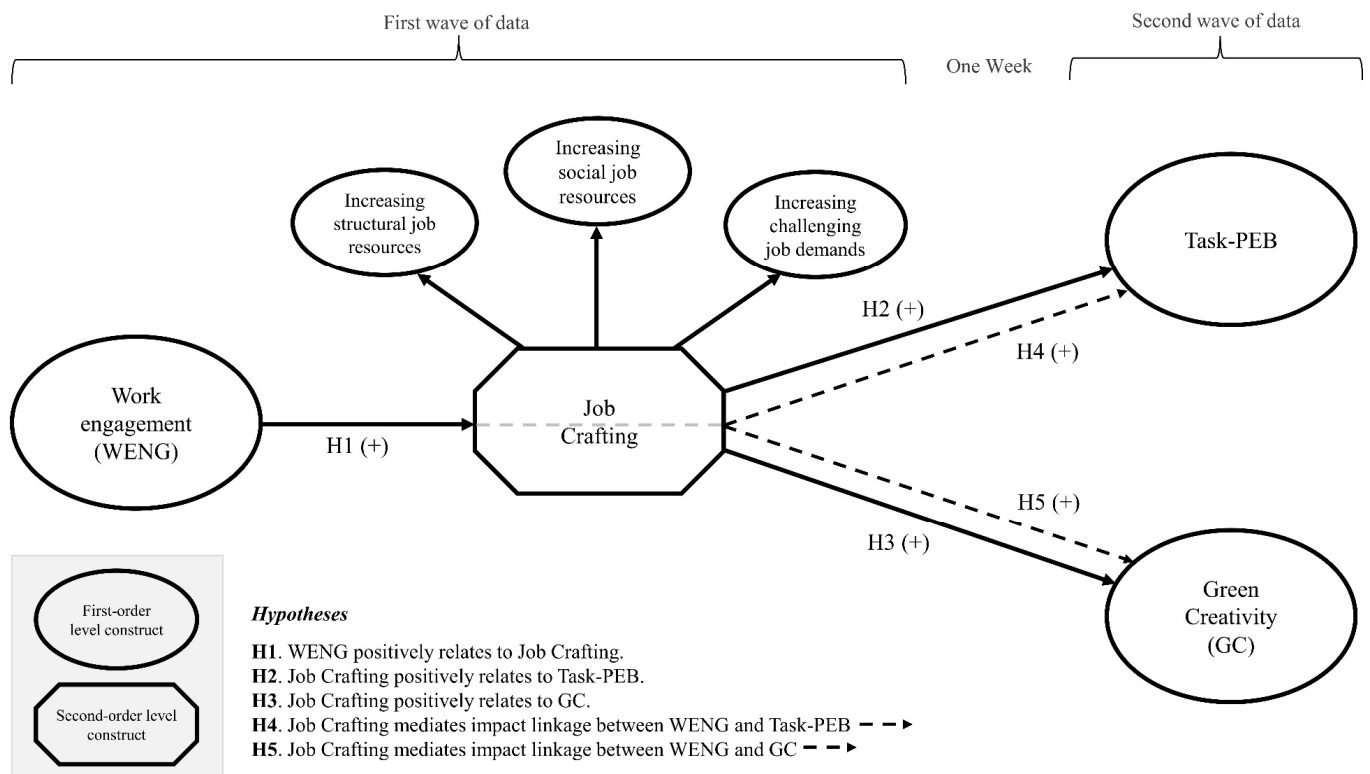


Figure 1. Research model and design.

3. Materials and Methods

3.1. Sample and Procedure

In this paper, we utilized the judgmental sampling technique. The criteria utilized for selecting respondents considering this sampling method were as follows: First, employees in customer-contact positions were included in the study because highly work-engaged CCEs contribute to firm performance [55]. Moreover, hospitality employees are considered "... the forefront of the development of green innovative ideas" ([41], p. 920). Second, full-time CCEs were invited to participate in our study. This is because full-time employees spend most of their time in the workplace compared to part-time employees and are more familiar with the firm's ES efforts [2,56]. Third, we focused only on employees working in hotels and restaurants since the hospitality industry is considered one of the main energy and water consumers [57]. According to [58], the hospitality industry in the UK produced 1.1 billion tons of food waste yearly. A sharp increase in the number of tourists who would stay in hotels and dine outside would engender environmental pollution [59]. Regardless of the environmental development level of the country, waste of food, and excessive use of energy and water, individuals were expected to display ecological behavior and help the helpless. Fourth, employees who resided in the United Kingdom and whose first language was English were included in the sample.

To mitigate common method variance (CMV), different ex ante solutions were employed [60]. Specifically, we obtained data in two waves. One week was utilized between each wave. In the first wave, respondents completed the WENG and JC items. In the second wave, they completed the TPEB and green creativity items. Respondents were also informed that they would be invited to take part in the second wave after seven days. Respondents' identification numbers facilitated the matching process of the questionnaires. As is the case with online data collection platforms, confidentiality and anonymity were guaranteed, and informed consent was given.

Two hundred and twenty-two respondents were requested to complete the online surveys. In total, 201 respondents completed the surveys. In the second wave, the researcher obtained 187 surveys. This resulted in a response rate of 85%. Such a response rate is not surprising because data were collected from two specific groups of employees (i.e., CCEs in hotels and restaurants). Table 1 shows the respondents' profile.

Table 1. Respondents' profile ($n = 187$).

	Frequency (%)
Gender	
Male	71 (38)
Female	116 (62)
Age	
18–27	88 (47.1)
28–37	58 (31)
38–47	20 (10.7)
48–57	10 (5.3)
58 and above	11 (5.9)
Education	
Secondary and high school	53 (28.3)
Two-year college degree	42 (22.5)
Four-year college degree	86 (46)
Graduate degree	6 (3.2)
Organizational tenure	
Below 1 year	17 (9.1)
1–5 years	105 (56.1)
6–10 years	34 (18.2)
11–15 years	18 (9.6)
16–20 years	8 (4.3)
Longer than 20 years	5 (2.7)
Marital status	
Single or divorced	145 (77.5)
Married	42 (22.5)
Position	
Entry-level	53 (28.3)
Supervisory	134 (71.7)

We use the latest recommendations to evaluate whether 187 respondents reach an adequate sample size that allows testing of the proposed model while guaranteeing sufficient statistical power. To do this, we rely on [61] and calculate by using two different techniques, which are consistent with partial least squares–structural equation modeling (PLS-SEM), the minimum sample size (n_{min}). Both the inverse square root method and the gamma-exponential method offer a calculation of the n_{min} considering the specific characteristics of the model studied. First, the inverse square root method offers a minimum sample size necessary to guarantee that the effect associated with the smallest and most significant path coefficient in the model will be correctly judged as statistically significant [61]. For alpha 5% and power 80%, the above can be expressed mathematically as follows:

$$n_{min} > \left(\frac{2.486}{|0.319|} \right)^2 = 60.732$$

Second, we applied the gamma-exponential method. Its implementation requires the use of calculation software. We used WarpPLS v.8.0 software for this purpose. As expected, the result was similar although lower for alpha 5% and power 80%, obtaining a value of $n_{min} = 48$. In summary, the recommended tests confirmed that the sample size used for the research model ($N = 187$) achieved sufficient statistical power.

3.2. Measurement

Before initiating the data collection, the surveys used in two waves were subjected to a pilot study. Two academicians checked the surveys regarding the readability and understandability of the items. As a result of this study, no amendments in wording were made.

Nine items from [4] were tapped to operationalize WENG (the predictor variable). Responses were coded via “6 (always)” and “0 (never)”. JC (the mediating variable) was measured with 15 items from [9]. Following instructions from [62] in the specification of higher-order constructs (HOCs), the variable was treated as a reflective second-order construct. The objective was to adequately capture three dimensions originally described by [9], that is, structural JRs, social JRs, and challenging JDs. Each dimension included five items. Responses were recorded as “5 (very often)” and “1 (never)”.

TPEB (the criterion variable) was assessed via three items from [29]. Employees used a 5-point scale (“5 = almost always” and “1 = never”) to respond to the aforesaid items. The last criterion variable we used was green creativity. This was gauged via six items taken from [24]. The response scale ranged from “1 = strongly disagree” to “5 = strongly agree”.

3.3. Data Analysis

To assess the effectiveness of our structural and measurement models, we used PLS-SEM. In cases where the primary statistical objective is prediction, PLS-SEM is the preferred approach [63]. When researchers incorporate HOCs into the research model, PLS-SEM is an appropriate statistical method [62,63]. Regarding this, JC was considered a HOC, which further supported the appropriateness of PLS-SEM for the present study.

Our study adopted a dual explanatory and predictive approach. Therefore, following the procedures described in [63], we established a three-phase examination for this work. First, we conducted an evaluation of the outer model to ensure its adequacy. Next, the structural model was assessed, allowing for hypothesis testing. Finally, we tested the predictive capability of our proposed model using holdout samples. For all these steps, we used the SmartPLS4 software.

4. Results

4.1. Confirmatory Composite Analysis

We performed confirmatory composite analysis (CCA) since it has been indicated as the most appropriate way to test whether the model’s fit empirically supported the design of our measurement model, as it is a saturated model and from one point in view of its structure or items assignment [64]. We used two approaches that included the assessment of the measurement model for first- and second-order constructs [62]. Specifically, from a more general point of view, “Standardized root mean square residual” (SRMR) always remained below 0.08 for a saturated model [64]. We then applied an exact discrepancy-based approach described by [64] to compare an implicit and empirical matrix at the first- and second-order level. The results are given in Table 2.

Table 2. Confirmatory composite analysis (CCA) results for first- and second-order level saturated models.

Discrepancies	First-Order Level		Second-Order Level		Conclusion
	Value	HI99	Value	HI99	
SRMR	0.046	0.050	0.045	0.047	Supported
d _{ULS}	1.108	1.296	0.571	0.606	Supported
d _G	0.580	0.677	0.268	0.337	Supported

Notes: SRMR = standardized root mean square residual; d_{ULS} = unweighted least squares distance; d_G = geodesic distance.

Here we compared each statistic with a limit set at the 99th quantile (HI₉₉) based on a bootstrap resampling of 10,000 samples. We obtained values below the threshold for SRMR in a model with first-order constructs (0.046) as well as in a model with second-order constructs (0.045). Likewise, the discrepancy values were always lower than the reference threshold when the reference statistic was “unweighted least squares distance” (d_{ULS}), as well as for “geodesic distance” (d_G). Collectively, these findings suggested that the evaluated model had satisfactory properties and should be accepted [64].

4.2. Configuration and Measurement of Compounds

The PLS algorithm was applied to assess the adequacy of the measurement model considering the recommendations made by [63]. Additionally, the evaluation was conducted at the first- and second-order construct levels as recommended by [62] for models that include HOCs. Table 3 provides a summary of the outcomes for the two levels. As demonstrated, all the item loadings were >0.70 and significant. We calculated the average variance extracted (AVE) values. The AVE values for first-order level, i.e., WENG, structural JRs, social JRs, challenging JDs, TPEB, and green creativity, were 0.711, 0.751, 0.627, 0.611, 0.857, and 0.766, respectively. For the second-order level (i.e., JC), AVE stood at 0.734. All the AVE values exceeded the cutoff value of 0.50, indicating that convergent validity was verified [63]. For a more precise approach, we used two statistics to gauge composite reliability (CR), namely *pA* and *pC*. Values were calculated similarly for constructs at both the first- and second-order levels. Both were greater than 0.70 in all cases. Similarly, coefficient alphas were above 0.70. In short, the measures were reliable, and convergent validity was corroborated [63].

Table 3. Measurement model quality check for first- and second-order levels.

Composite	Mean	SD	Kurtosis	Skewness	Loadings	α	<i>pA</i>	<i>pC</i>	AVE
Work engagement						0.949	0.951	0.957	0.711
gwe01	3.540	1.301	−0.003	−0.610	0.838 ***				
gwe02	3.610	1.452	−0.460	−0.542	0.849 ***				
gwe03	3.893	1.683	−0.389	−0.773	0.897 ***				
gwe04	3.091	1.835	−1.027	−0.245	0.854 ***				
gwe05	2.957	1.748	−0.955	−0.164	0.839 ***				
gwe06	3.957	1.592	−0.097	−0.732	0.786 ***				
gwe07	4.037	1.716	−0.546	−0.673	0.838 ***				
gwe08	3.765	1.635	−0.554	−0.557	0.864 ***				
gwe09	3.620	1.671	−0.698	−0.437	0.818 ***				
Job crafting						0.821	0.875	0.891	0.734
Structural JRs					0.899 ***	0.889	0.891	0.923	0.751
Structural_JR01	3.930	0.998	−0.246	−0.707	0.883 ***				
Structural_JR02	3.914	1.120	0.197	−0.981	0.894 ***				
Structural_JR03	4.043	0.953	0.061	−0.797	0.884 ***				
Structural_JR04	3.979	0.907	0.359	−0.781	0.803 ***				
Structural_JR05			Dropped						

Table 3. Cont.

Composite	Mean	SD	Kurtosis	Skewness	Loadings	α	pA	pC	AVE
<i>Social JRs</i>					0.747 ***	0.855	0.877	0.893	0.627
Social_JR01	2.845	1.189	−0.886	0.150	0.751 ***				
Social_JR02	3.027	1.293	−1.117	−0.020	0.839 ***				
Social_JR03	2.840	1.306	−1.080	0.141	0.791 ***				
Social_JR04	2.952	1.255	−1.019	0.026	0.823 ***				
Social_JR05	3.503	1.082	−0.695	−0.288	0.751 ***				
<i>Challenging JDs</i>					0.914 ***	0.841	0.849	0.887	0.611
Challeng_JD01	3.599	1.097	−0.197	−0.647	0.837 ***				
Challeng_JD02	3.743	1.023	0.488	−0.887	0.764 ***				
Challeng_JD03	3.487	1.125	−0.417	−0.477	0.772 ***				
Challeng_JD04	3.636	1.218	−0.482	−0.688	0.778 ***				
Challeng_JD05	3.171	1.144	−0.790	−0.276	0.753 ***				
Task-related pro-environmental behavior						0.917	0.932	0.947	0.857
tPEB01	3.733	0.938	0.511	−0.733	0.897 ***				
tPEB02	3.749	0.875	0.563	−0.692	0.940 ***				
tPEB03	3.738	0.866	0.870	−0.710	0.940 ***				
Green creativity						0.938	0.940	0.951	0.766
gc01	3.406	1.191	−0.617	−0.561	0.906 ***				
gc02	3.246	1.190	−0.813	−0.391	0.928 ***				
gc03	3.257	1.187	−0.789	−0.336	0.884 ***				
gc04	3.037	1.190	−0.862	−0.150	0.876 ***				
gc05	3.278	1.074	−0.620	−0.339	0.787 ***				
gc06	3.390	1.096	−0.408	−0.603	0.864 ***				

Notes: Italics used for first-order constructs and values. α = Cronbach's alpha; pA = Dijkstra-Henseler's statistic; pC = composite reliability; AVE = average variance extracted; JRs = job resources; JDs = job demands. Indicator loading significance=confidence interval based on two-tailed test and 10,000 samples; *** p -value < 0.000.

To check discriminant validity, we used the Heterotrait–Monotrait (HTMT) criterion [65]. Similarly, our approach aimed to verify that the constructs were truly distinct from one another, including both the first- and second-order level constructs [62]. First, we employed the $HTMT_{ratio}$. In brief, it represented the estimation of what the actual correlation between the two variables would be if they were measured perfectly [65]. Values below 0.90 were expected to confirm discriminant validity [65]. The results confirmed that this threshold was not exceeded for any combination of constructs, as shown in Table 4. Subsequently, to ensure that the HTMT ratio value consistently remained below 0.85, we employed $HTMT_{inference}$ [65]. Confidence intervals were constructed using a bootstrap resampling method, with a two-tailed test and a significance level of 0.05. The results confirmed that no confidence interval included values exceeding 0.90 (Table 4). As a result, discriminant validity was corroborated.

Table 4. Discriminant validity using HTMT criterion for first- and second-order level.

Construct	HTMT _{ratio} [HTMT _{inference}]					
	1	2	2.1	2.2	2.3	4
(1) Work Engagement	-					
(2) Job Crafting	0.709 [0.589–0.810]	-				
(2.1) Structural JRs	0.668 [0.547–0.771]	n/a	-			
(2.2) Social JRs	0.361 [0.210–0.515]	n/a	0.610 [0.499–0.717]	-		

Table 4. Cont.

	HTMT _{ratio} [HTMT _{inference}]					
(2.3) Challenging JDs	0.736 [0.623–0.827]	n/a	0.836 [0.755–0.900]	0.608 [0.478–0.727]	-	
(3) Task-PEB	0.307 [0.154–0.451]	0.415 [0.255–0.559]	0.340 [0.180–0.491]	0.257 [0.130–0.408]	0.421 [0.263–0.570]	-
(4) Green Creativity	0.244 [0.105–0.407]	0.424 [0.263–0.577]	0.351 [0.203–0.491]	0.268 [0.137–0.426]	0.421 [0.263–0.568]	0.641 [0.528–0.742]

Notes: Italics used for first-order constructs and values. JRs = job resources; JDs = job demands. HTMT_{ratio} = Heterotrait–Monotrait ratio; [HTMT_{inference}] = Heterotrait–Monotrait inference bootstrapping confidence interval test based on 10,000 samples and two-tailed test; n/a = not applicable.

4.3. The Marker Variable

CMV was controlled using the marker variable technique (ex post solution). The findings indicated that the significance of the variable correlations was unaffected whether the marker variable was included or not. In short, CMV was not an issue in our research [60]. Means and standard deviations as well as measure intercorrelations are given in Appendix A.

4.4. Test of Research Hypotheses

According to [62], we constructed a second-order reflective–reflective model using the disjoint two-stage approach. Before starting the hypothesis testing, an initial assessment of the research model required ruling out that the study variables had multicollinearity issues. We used the Variance Inflation Factors (VIFs) to assess this possibility, as suggested by [65]. As shown in Table 5, all combinations of constructs remained between 1.00 and 1.863 (all were <3.00), allowing us to rule out biases due to collinearity among the constructs [63].

Similarly to the procedure used to ensure the saturated model’s proper specification, we now use the discrepancies between the empirical matrix and the implied correlation matrix to assess the adequacy of the fit of the estimated model [64]. As shown in Table 5, the discrepancies are lower than the 99th percentile of the bootstrap discrepancies for SRMR (0.048), d_{ULS} (0.633), and d_G (0.276), suggesting that the proposed model maintains adequate fit values [64].

The findings in Table 5 denote that WENG depicted a positive association with JC ($\beta = 0.657$, $p_{\text{one-tailed}} < 0.000$, $t = 13.935$), confirming Hypothesis 1. CCEs high in WENG redesign their jobs and optimize their work environment better. The effect size associated with this relationship ($f^2 = 0.758$) is considered very large [65], indicating that WENG exerted a substantial substantive influence on job crafting beyond statistical significance. In addition, the coefficient of determination for job crafting ($R^2 = 0.431$) reflected a moderate-to-substantial level of explained variance [65,66], confirming that WENG meaningfully accounted for almost half of the variance in job crafting behavior among CCEs.

JC positively influenced TPEB ($\beta = 0.319$, $p_{\text{one-tailed}} < 0.000$, $t = 3.683$). This lent support to Hypothesis 2. The corresponding effect size ($f^2 = 0.067$) suggested a small-to-medium substantive effect, implying that job crafting contributed meaningfully to the variance in TPEB ($R^2 = 0.142$). Although the R^2 value for TPEB was modest, it still represented meaningful explanatory power in behavioral research contexts [65], indicating that job crafting provided an important though not dominant contribution to employees’ pro-environmental behaviors.

Hypothesis 3 was also verified as JC exerted a positive impact on green creativity ($\beta = 0.400$, $p_{\text{one-tailed}} < 0.000$, $t = 4.063$). The effect size for this path ($f^2 = 0.106$) indicated

a medium-level substantive influence, showing that job crafting meaningfully enhanced green creativity among CCEs. Similarly, the R^2 value for green creativity ($R^2 = 0.146$) indicated a modest but non-trivial proportion of explained variance, consistent with theoretical expectations in human resource management and organizational behavior studies, where multiple contextual factors influenced creative performance [66]. In a workplace where CCEs seek social support from their supervisors and coworkers and possess an adequate level of challenging JDs, they help the firm achieve its ES goals by exhibiting TPEBs and green creativity at elevated levels.

Table 5. Structural model results.

	VIF	Path Coefficient (<i>p</i> -Value)	<i>t</i> -Value	CI	f^2	Conclusion
Direct effects test						
WENG → Task-PEB (c'_1)	1.863	0.082 (0.182)	0.909	−0.075; 0.222	0.004	No effect
WENG → GC (c'_2)	1.863	−0.028 (0.401)	−0.252	−0.209; 0.156	0.001	No effect
H1: WENG → Job Crafting (a_1)	1.000	0.657 (0.000)	13.935	0.568; 0.726	0.758	Supported
H2: Job Crafting → Task-PEB (b_1)	1.787	0.319 (0.000)	3.683	0.169; 0.456	0.067	Supported
H3: Job Crafting → GC (b_2)	1.787	0.400 (0.000)	4.063	0.228; 0.550	0.106	Supported
Mediating effects test						
H4: WENG → Job Crafting → Task-PEB (a_1b_1)		0.209 (0.000)	3.467	0.114; 0.313	Full mediation	Supported
H5: WENG → Job Crafting → GC (a_1b_2)		0.262 (0.000)	3.709	0.150; 0.379	Full mediation	Supported
TOTAL EFFECT on Task-PEB		0.291 (0.000)	4.002	0.166; 0.404		
TOTAL EFFECT on GC		0.234 (0.002)	2.886	0.089; 0.358		
Control variables						
Gender → Task-PEB	1.035	0.244 (0.089)	0.199	−0.035; 0.520	0.016	No effect
Organizational Tenure → Task-PEB	1.069	0.078 (0.183)	1.331	−0.042; 0.189	0.007	No effect
Gender → GC	1.035	−0.029 (0.842)	0.199	−0.306; 0.271	0.000	No effect
Organizational Tenure → GC	1.069	0.106 (0.090)	1.697	−0.021; 0.222	0.012	No effect
Determination coefficient		R^2	Adjusted R^2			
Job Crafting		0.431	0.428			
Task-PEB		0.142	0.133			
GC		0.146	0.137			
Estimated model fit		Discrepancy value		HI ₉₉		
SRMR		0.048		0.048		
d_{ULS}		0.633		0.639		
d_G		0.276		0.339		

Notes: WENG = work engagement; Task-PEB = task-related pro-environmental behavior; GC = green creativity; SRMR = standardized root mean square residual; d_{ULS} = unweighted least squares distance; d_G = geodesic distance; VIF = Variance Inflation Factor; CI = confidence interval based on 10,000 one-tailed bootstrapping test; *p*-value in parentheses; two-tailed bootstrapping test for CV.

For the analysis of indirect effects, we applied the procedure described in [67]. The test concerning the first indirect effect evaluated, that is a_1b_1 , showed that JC mediated the effect of WENG on TPEB ($\beta = 0.209$, $p_{\text{one-tailed}} < 0.000$, $t = 3.467$). Hence, Hypothesis 4 was supported. The mediation test also indicated that JC was a mediator between WENG and green creativity ($\beta = 0.262$, $p_{\text{one-tailed}} < 0.000$, $t = 3.709$). Therefore, Hypothesis 5 was confirmed. Additionally, the direct effects associated with the mediations, namely WENG on TPEB denoted as c'_1 ($\beta = 0.082$, $p_{\text{one-tailed}} > 0.182$, $t = 0.909$) and WENG on green creativity denoted as c'_2 ($\beta = -0.028$, $p_{\text{one-tailed}} > 0.401$, $t = -0.252$), were found to be non-significant as we graphically illustrate in Figure 2. Accordingly, both indirect effects were classified as full mediations [63]. These findings were consistent with the very small direct

effect sizes ($f^2 = 0.004$ and $f^2 = 0.001$, respectively), confirming that the influence of WENG on both outcomes operated entirely through job crafting [65]. Together, the combination of f^2 and R^2 results suggested the substantive significance of the model: while WENG strongly predicted job crafting (high R^2 and large f^2), job crafting exerted smaller yet meaningful effects on TPEB and green creativity (moderate R^2 and small-to-medium f^2). These patterns of f^2 and R^2 highlighted the substantive significance of the structural relationships: while WENG was a strong driver of job crafting (large effect), job crafting exerted smaller but meaningful effects on TPEB and green creativity, aligning with theoretical expectations in pro-environmental HRM research. In closing, CCEs who are energetic, enthusiastic about their jobs, and are engrossed in their work display JC at high levels, resulting in elevated TPEBs and green creativity.

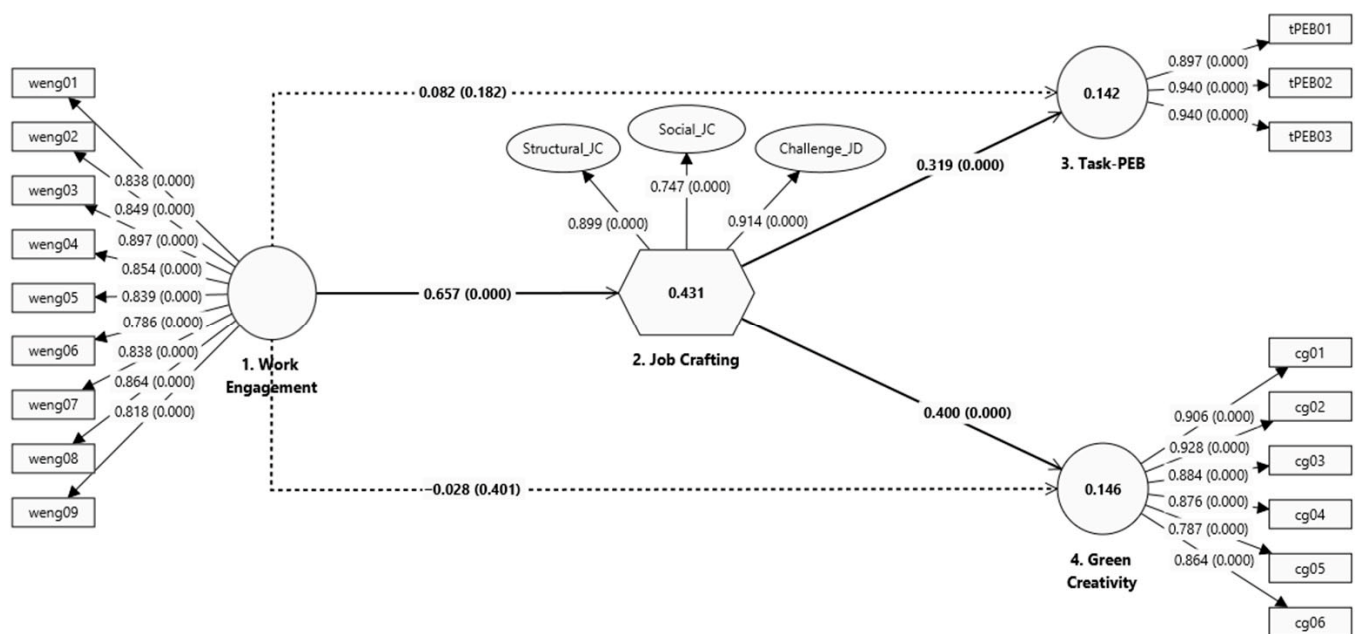


Figure 2. Direct effects for structural model test results. Notes: Graphic output from SmartPLSv.4 software; c' effects were represented by dotted line: inner model: paths and (p -values); outer model: item loadings and (p -values). Based on one-tailed bootstrapping test and 10,000 samples. Confidence interval method = percentile bootstrap; significance level = 0.05.

4.5. Assessment of the Model's Predictive Strength

Predictive ability pertains to the model's effectiveness in producing precise forecasts for new data points. This ability can be assessed cross-sectionally, meaning it predicts observations not included in the initial sample, often referred to as out-of-sample estimates [65]. Strong predictive strength provides validation for the conclusions drawn from evaluating the theoretical model under analysis. We employed holdout samples to evaluate the model's predictive strength, concentrating on both dependent variables: TPEB and green creativity. Essentially, this method employed a subset of the entire data set to determine the model parameters (training sample) and then predicted the indicators of the dependent variables in the leftover portion of the data set, referred to as the holdout sample (out-of-sample data) [68].

The findings are presented in Table 6. Q^2_{predict} values were positive and non-zero for all indicators in both TPEB and green creativity. We utilized "Root mean squared error" (RMSE) as a primary error indicator because skewness values below 1 in absolute terms indicated that the errors were distributed nearly symmetrically [63]. Comparatively, the PLS model results demonstrated better prediction errors, with lower errors than the linear

model for all TPEB and green creativity indicators. These findings illustrated that the studied model possessed high predictive power for the outcome variables [68].

Table 6. Out-of-sample predictive power assessment.

Items of DV	PLS			LM		PLS-LM	
	Q^2_{predict}	RMSE	MAE	RMSE	MAE	RMSE	MAE
Task-PEB							
tPEB01	0.038	0.926	0.711	0.968	0.750	−0.042	−0.039
tPEB02	0.076	0.846	0.662	0.876	0.687	−0.030	−0.025
tPEB03	0.055	0.847	0.654	0.890	0.684	−0.043	−0.030
Green Creativity							
gc01	0.046	1.170	0.981	1.210	1.007	−0.040	−0.026
gc02	0.034	1.176	0.991	1.208	1.014	−0.032	−0.023
gc03	0.002	1.194	0.996	1.240	1.045	−0.046	−0.049
gc04	0.042	1.173	0.970	1.204	1.006	−0.031	−0.036
gc05	0.027	1.065	0.897	1.086	0.908	−0.021	−0.011
gc06	0.001	1.102	0.920	1.142	0.960	−0.040	−0.040

Notes: Task-PEB = task-related pro-environmental behavior; PLS-LM = differential between the PLS solution and the linear regression model (LM) solution; RMSE = root mean squared error; MAE = mean absolute error. PLSpredict routine based on six subgroups (k) and ten repetitions.

4.6. Importance–Performance Analysis

To enhance our knowledge of how the model affected the outcome constructs, we conducted complementary analyses focusing on importance–performance maps (IPMAs). In IPMAs, we compared the total immediate and mediated impacts of every independent construct on the outcome variable (importance) with the mean values of every latent variable rescaled from 0 to 100 points (performance). For this examination, we used the approach outlined by [63], creating several scatter plots (maps) that aided in interpreting our results.

Initially, IPMAs (Figures 3 and 4) indicated that boosting structural and social JRs had relatively minor significance at the construct level. Conversely, challenging JDs and WENG were found within or just adjacent to the top right section of the chart, signifying both elevated performance and importance. With a total effect of 0.291 on TPEB and 0.234 on green creativity, WENG had a comparatively substantial impact on the study variables. In the same way, challenging JDs showed a great influence in terms of importance–performance (i.e., 0.290 on TPEB and 0.316 on green creativity). For instance, improving employees' WENG scores by one unit would lead to a 0.233-point increase in the performance of the target variable, green creativity.

Based on the results obtained at the construct level, we focused on the analysis at the indicator level on the importance of the performance of challenging JDs and WENG indicators. These analyses were illustrated in Figures 5 and 6. The graphical representation helped us identify which items within each variable were especially influential when considering TPEB and green creativity, respectively. For example, in both instances, the indicators for challenging JDs outperformed WENG in terms of both importance and performance. Moreover, it can be identified that focusing on ChallengeJD01 would be particularly beneficial for achieving a substantial improvement in the outcome variables.

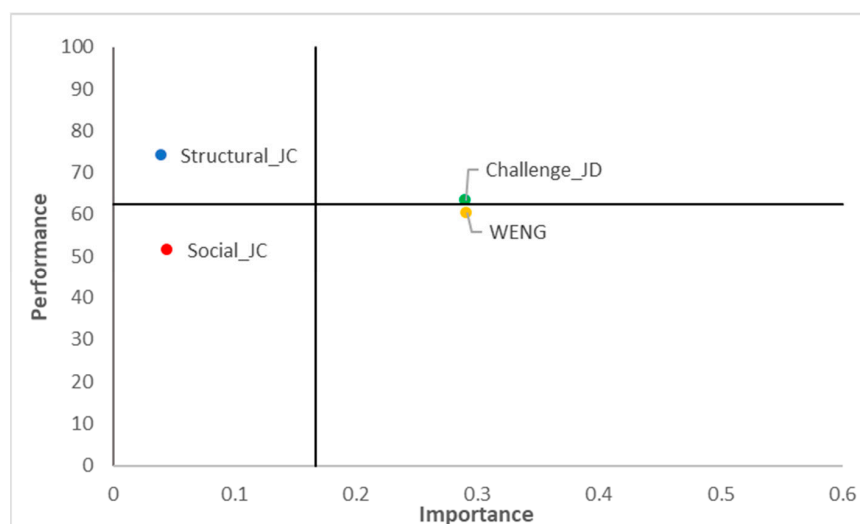


Figure 3. Importance–performance map at the construct level on task-related pro-environmental behavior.

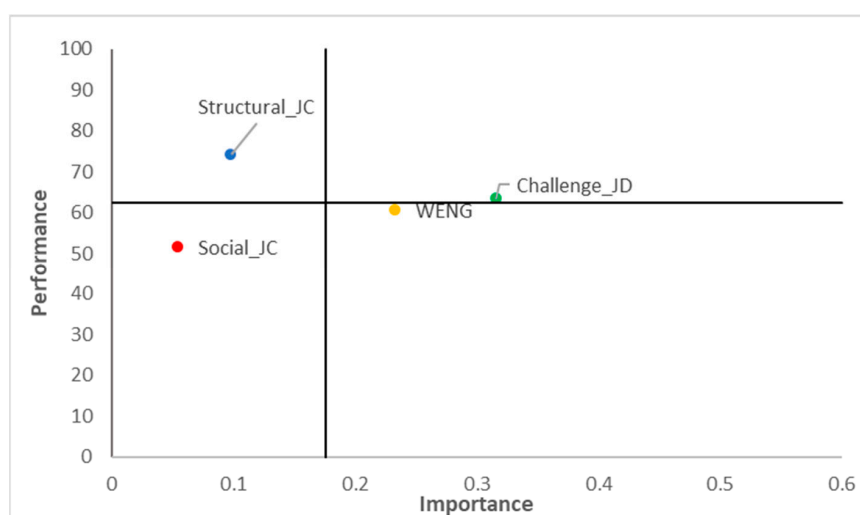


Figure 4. Importance–performance map at the construct level on green creativity.

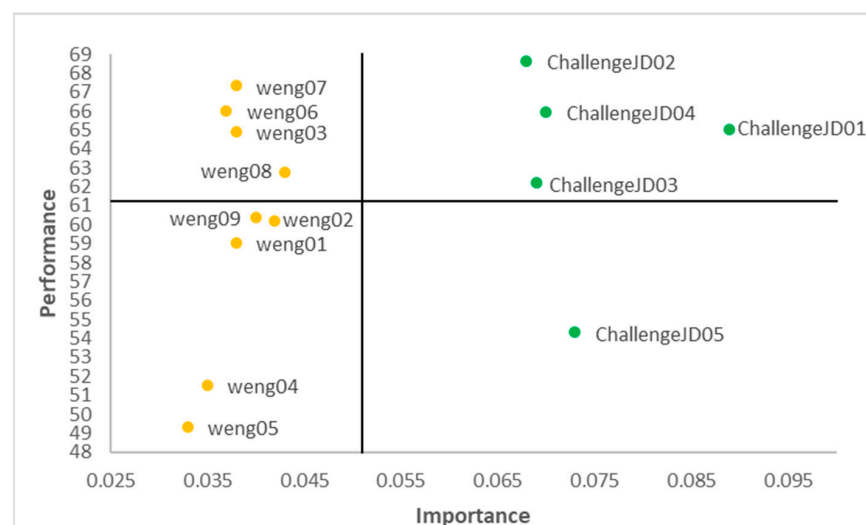


Figure 5. Importance–performance map for work engagement (WENG) items and challenging JD items on the dependent variable of task-related pro-environmental behavior.

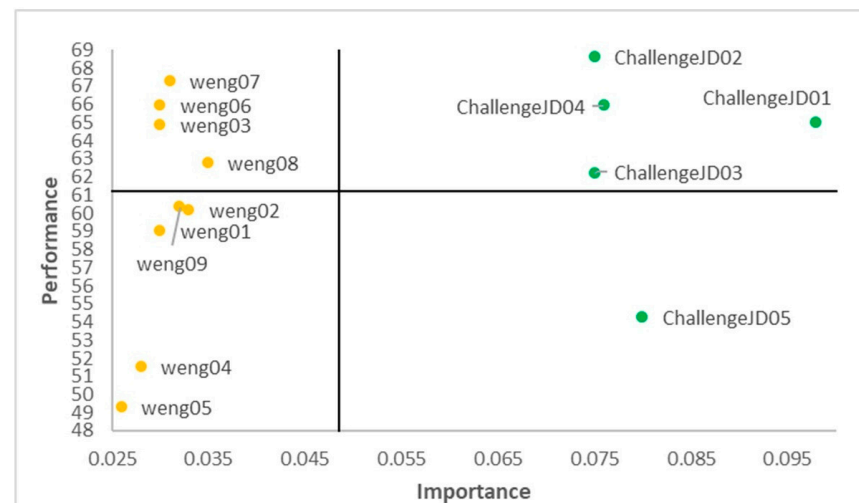


Figure 6. Importance–performance map for work engagement (WENG) items and challenging JD items on the dependent variable of green creativity.

4.7. Robustness Model Check: Endogeneity

It is essential to ensure that the proposed model does not suffer from endogeneity issues that might skew the PLS-SEM estimates. A good starting point for an endogeneity test is to add control variables to the model that directly affect the dependent variable [69]. The control variables analyzed, gender and organizational tenure, had no effect on any of the outcome variables in the model (Table 5). To do this, it was first necessary to ensure that latent variable scores did not follow a normal distribution, which was confirmed with *p*-values for the Cramer-van Mises test lower than 0.05. Next, we incorporated a Gaussian copula for each explanatory construct that impacted the outcome constructs, namely those affecting TPEB and/or green creativity. Table 7 summarizes our results. The test revealed that each Gaussian copula included in the model was not significant, implying that endogeneity was not of concern for the model tested and affirming its robustness [70].

Table 7. Gaussian copula evaluation.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Value	<i>p</i> -Value	Value	<i>p</i> -Value	Value	<i>p</i> -Value	Value	<i>p</i> -Value	Value	<i>p</i> -Value
Copula in WENG → Task-PEB	0.545	0.074							0.485	0.125
Copula in Job Crafting → Task-PEB			0.413	0.279					0.213	0.590
Copula in WENG → GC					0.184	0.541			0.187	0.559
Copula in Job Crafting → GC							0.066	0.863	−0.011	0.978

Notes: WENG = work engagement; Task-PEB = task-related pro-environmental behavior. Gaussian copula *p*-values based on a bootstrapping procedure of 5000 samples, percentile method, and a two-tailed distribution.

5. Discussion

5.1. General Findings

Our paper investigates whether JC mediates the influence of WENG on TPEB and green creativity. Data come from hotel and restaurant CCEs. The findings are in support of the hypothesized associations. The strong impact of WENG on JC suggests that work-engaged CCEs act proactively to craft their jobs. That is, CCEs who are energetic, dedicated, and absorbed craft their jobs by searching for social support from their supervisors and coworkers and having a sufficient level of challenging JDs. Consistent with the tenets of JD-R theory [5] and the work of [17], such CCEs change their job demands and resources via proactive behaviors that enable them to optimize the work environment. In a workplace where management promotes JC behaviors, employees are motivated to take action on making amendments in job demands and resources to make their jobs more meaningful

and enjoyable. Consistent with recent research [7], our research shows that highly engaged employees strive for excellence and are dedicated to high standards that motivate them to rearrange the job and adjust it to their personal skills and capabilities. Unlike the overwhelming majority of the empirical pieces, a reverse causal linkage, other than the JC → WENG link, suggests that employees high in WENG are among the organizational staff who craft their jobs utilizing the current job resources and demands.

The findings suggest that JC stimulates CCEs' TPEBs and green creativity. CCEs craft their jobs by availing themselves of current job resources and searching for new challenging environmental and green tasks in the workplace. Such employees perform their tasks in an eco-friendly way and contribute to the firm's ES efforts through green creative ideas. Since customer-contact positions are active jobs that can be characterized by excessive job demands, CCEs are likely to search for challenging situations that promote learning [71]. In such a workplace, CCEs would display pro-environmental behaviors and support the firm's environmental actions and initiatives via their green creativity. Recent research emphasized the role of green-related aspects (e.g., green WENG, green crafting, organizational citizenship behavior towards the environment, or green performance [12–14]). Our research confirms that beyond green-related antecedents, non-green predictors can also facilitate green creativity and TPEB. The findings presented above are also consonant with the principles of the JD-R theory.

In this paper, we reported that the impact of WENG on hospitality employees' TPEBs and green creativity was completely mediated by JC. As advanced by JD-R theory [5], work-engaged employees are goal-oriented and focus on their tasks. They make a combination of job and personal resources with challenging JDs to craft their jobs. This highlights a proactive behavior that is related to JC. When CCEs craft their jobs using structural and social JRs associated with ES as well as novel challenging environmental and green tasks, they exhibit TPEBs and green creativity at elevated levels.

On a closing note, the preponderance of the hypothesized associations has not been subjected to an empirical inquiry before. Having a deep understanding of whether WENG mediates the influence of job crafting on TPEB and green creativity is relevant and important. CCEs who can craft their jobs via structural JRs, social JRs, and challenging JDs are engaged in their work, thereby exhibiting desirable green behaviors. The findings we reported in the current study confirmed such hypothesized links.

5.2. Theoretical Implications

Our paper has important contributions to the current hospitality and tourism knowledge base. First, the findings of our paper clearly indicate that non-green-related factors promote green work outcomes [15,16]. Such findings are significant because no empirical piece has gauged the effect of JC on hospitality or tourism workers' green-related outcomes, such as TPEB and green creativity, so far. This study fills in the lacuna by reporting that JC behaviors foster hospitality employees' green work outcomes.

Second, the literature presents evidence about JC as a mediator between WENG and job outcomes [38]. However, the literature is devoid of empirical research about JC as an underlying mechanism that links WENG to the abovementioned green outcomes. With this recognition, our paper tested these associations and reported that JC completely mediated the impact of WENG on TPEB and green creativity.

Third, in line with other studies [17], in this research, we test the direct effect of WENG on JC. A reverse causal linkage is also valid [44]. Though the JC → WENG relationship seems to be more dynamic [5], there is a need for future research in the hospitality and tourism knowledge base that can test these effects via longitudinal data. Fourth, our research is consistent with the United Nations' sustainable development goals [16],

contributing to goal 9 (“industry, innovation, and infrastructure”), goal 12 (“responsible consumption and production”), and goal 13 (“climate actions”). Lastly, our research also adds to the literature by utilizing data gathered from hospitality employees in the United Kingdom since there is relatively little research on green creativity compared with that conducted in non-Western countries [20].

5.3. Practical Implications

Our paper presents several useful recommendations for managers and their employees. First, it has been reported that WENG has a strong positive effect on JC. If top management does not see JC as a strategy to increase the organizational performance, any efforts from the start would result in failure [72]. By taking into account such findings, hospitality companies should establish an environment where CCEs are informed about JC opportunities. In the workplace, job autonomy and work social support are among the critical job resources CCEs can take advantage of. These employees can redesign their jobs by paying utmost attention to ES (e.g., utilizing recycled paper, consuming less energy and water, and switching off lights in an unoccupied room). In the hotel, employees may green design plates to enhance customers’ dining experiences.

Second, hospitality companies should utilize rigorous selective staffing procedures to make sure that they hire candidates who really pay particular attention to environmental concerns and the green environment. This may be detected via short case studies during interview sessions. Hiring and training these individuals with regard to the firm’s ES efforts and green initiatives would contribute to the protection of the ecological environment.

Third, management should organize workshops to motivate employees to display green creativity. In these workshops, success stories (e.g., Starbucks and Accor Hotels) about ES in the hospitality industry can be shared with employees and their continuous engagement in green creativity can be emphasized. In return, employees can come up with new ideas about the green design of the organization’s web page and dress code. They can also offer new ideas about the use of environmentally or green-related names for specific floors in the hotel or specific products in the restaurant. These practices would send positive signals to potential actual buyers about the firm’s commitment to ES.

Fourth, managers can create an environment that encourages open communication in the workplace to promote idea sharing for “greening” the organization. This can be achieved by organizing green meetings on a regular basis (e.g., weekly or monthly) where employees can exchange environmentally related practices and initiatives with each other.

Fifth, implementation of green initiatives such as recycling days and cleaning campaigns can serve as a strong motivational tool for CCEs to be engaged in sustainable and green efforts. Promoting such initiatives within the organization will raise employees’ awareness regarding green issues and create an environmentally responsible culture [73]. This would fuel TPEB and green creativity.

Lastly, hospitality companies should reward their employees who fulfill responsibilities in an environmental way and make them role models for new hires and inexperienced employees. Managers can monitor and evaluate employees’ TPEBs and green creativity and select the best environmentalists within the firm. The reward could be the design of a green room with the employee’s signature in the hotel or the design of a green table with their signature in the restaurant [2].

5.4. Limitations and Future Research

Our paper is subject to several limitations that point to fruitful implications for future research. First, we gathered time-lagged data from hospitality employees to gauge the study hypotheses. Though it provides some evidence about the issue of causality, it is

not adequate [74]. To overcome this caveat, future research could utilize longitudinal data and assess the linkages, focusing on the analysis of the causal effects among the study constructs.

Second, the study sample is relatively small and does not represent the entire sector. Data were collected from a specific region (the UK) and sector (CCEs in hotels and restaurants), where the level of empowerment is usually high. Under these circumstances, the study results might not be applied to employees in highly formalized workplaces. Future research may involve more diverse samples across different countries and industries to validate the findings.

Third, the caveat arising from the utilization of self-report data is CMV. To curtail the risk of CMV, we utilized procedural (e.g., time-lagged design) and statistical (i.e., marker variable) remedies. Though CMV is not an issue in our research, gauging the criterion variables based on supervisor ratings in the future would be fruitful.

Fourth, incorporating environmentally specific servant leadership or transformational leadership into the model may enable us to understand whether hospitality workers can craft their jobs better to display higher green work outcomes. Future studies can test these associations. Fifth, in future studies, cross-cultural data can be used to augment the literature. Specifically, gender can be used as a moderator to ferret out whether the positive impact of JC on TPEB and green creativity via WENG is stronger among male employees than among female employees. Sixth, the literature on ES and green management is bereft from cross-national studies. Future research can test this study's hypothesized relationships through cross-national data in different countries such as the United States, India, and Nigeria. This research design would provide additional support for the viability of the research model we tested. In addition, future studies can test whether green outcomes arise directly from job resources, independent of job crafting, in certain contexts.

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Data Availability Statement: The data presented in this study are available on request from the authors.

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Conflicts of Interest: The author declares no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

WENG	Work Engagement
TPEB	Task-Related Pro-Environmental Behavior
CCEs	Customer-Contact Employees
JC	Job Crafting
ES	Environmental Sustainability
JD-R	Job Demands–Resources

JRs	Job Resources
JDs	Job Demands
CMV	Common Method Variance
HOC	Higher-Order Construct
CCA	Confirmatory Composite Analysis
AVE	Average Variance Extracted
CR	Composite Reliability
HTMT	Heterotrait–Monotrait
VIFs	Variance Inflation Factors
RMSE	Root Mean Squared Error
IPMA	Importance–Performance Map

Appendix A

Table A1. Descriptive statistics and correlations of observed variables.

Variables	1	2	3	4	5	6	7	8	9
1. Gender	-								
2. Organizational tenure	0.119	-							
3. Work engagement	−0.056	0.206 *	-						
4. Structural JRs	0.017	0.105	0.636 *	-					
5. Social JRs	0.101	−0.047	0.324 *	0.487 *	-				
6. Challenging JDs	−0.010	0.105	0.654 *	0.727 *	0.515 *	-			
7. Task-related pro-environmental behavior	0.136	0.133	0.285 *	0.298 *	0.226 *	0.367 *	-		
8. Green creativity	0.019	0.126	0.230 *	0.328 *	0.239 *	0.372 *	0.595 *	-	
9. Place of birth	−0.143	−0.041	−0.072	−0.010	0.037	0.002	−0.053	−0.113	-
Mean	0.620	2.520	3.610	3.940	3.030	3.530	3.740	3.270	0.690
Standard deviation	0.490	1.100	1.380	0.750	0.980	0.880	0.830	1.010	0.460

Note: * $p < 0.01$ (two-tailed test). Gender (0 = male; 1 = female); organizational tenure (six categories); place of birth/market variable (0 = capital city; 1 = other). JRs = job resources; JDs = job demands.

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