Article

Igniting Vigour, Dedication and Absorption Among Generation Z Employees Through Green Organisational Climate, Group Cohesion and Technological Turbulence

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Abstract

Drawing on social identity theory, this study seeks to investigate the relationship between green organisational climate and employee engagement facets, such as vigour, dedication, and absorption. The research also explores the mediating effect of green group cohesion and the moderating effect of technological turbulence. A two-wave survey was administered to gather data, which were analysed utilizing partial least squares structural equation modelling. The findings indicate that green organisational climate does not consistently affect the vigour, dedication, and absorption of Gen Z employees unless green group cohesion is present. The results further demonstrate that technological turbulence serves as a significant moderator, exerting a negative impact on the relationship between green organisational climate and both vigour and dedication. This study offers novel insights that explain how green group cohesion positively mediates the influence of green organisational climate on employee engagement dimensions. The theoretical and practical implications are discussed, followed by research limitations and future avenues.

Keywords: green organisational climate; green group cohesion; vigour; dedication; absorption; technological turbulence
JEL: M14; O33; J24

1. Introduction

War, technological progress, and recurrent viral infections such as coronaviruses (COVID-19), influenza, and Human Metapneumovirus (HMPV) have altered the business environment considerably. Technological progress, for example, has shifted competition from a local to a global scale (Skare and Soriano, 2021; Ghauri et al, 2021). Additionally, war has caused significant disruptions to the global supply chain, and viral infections have compelled companies to mandate remote work for their employees (Allam et al, 2022). Moreover, the issue of climate change has exerted considerable influence on both employers and employees, thereby shaping consumer preferences. Environmentally friendly products are gaining traction, forcing companies to adjust their operations and invest in green technologies to comply with legal requirements and enhance brand loyalty (Chen et al, 2021; Chi et al, 2021; Faganel and Dessardo, 2024). Furthermore, climate anxiety has adversely affected employee engagement, as highlighted by Atta et al. (2024). Additionally, the dollar crisis and extreme weather events will compel companies to strengthen their competitiveness to ensure profitable and sustainable business survival in the coming years (United Nations, 2024). Therefore, management personnel worldwide have identified employees' work engagement (WE) as a crucial topic due to its pivotal role in achieving organisational success.

Given these conditions, China is no exception with its large majority of young (i.e., generation Z) and highly educated workforce (Yang et al, 2020; Liu et al, 2024). Work engagement for employees is defined as a psychological state focused on work (Schaufeli et al, 2002). WE comprises three dimensions: vigour, dedication, and absorption, characterised by high energy, a sense of purpose, and full immersion in work (Dunlop and Scheepers, 2023). However, critics note Gen Z employees' apparent lack of engagement in the workplace (Fernandez et al, 2023; Shumway, 2024). According to Pendell and Vander Helm (2022), 54% of Gen Z employees, slightly higher than other generations, are ambivalent or disengaged at work. Moreover, Shumway (2024) reported that work engagement among younger millennials and Gen Z declined from 40% to 35%. Nevertheless, by 2035, Gen Z employees will dominate the workforce, and by 2025, they will constitute 30% of the global population and 27% of the total workforce (Noor, 2024).

In response to these challenges, employers in China and elsewhere are implementing changes and introducing new programs to maintain this vital generation's engagement at work (Brown, 2025; Liu et al, 2024). Research indicates that engaged employees exhibit high energy and self-efficacy (Podder and Saha, 2024). Engaged employees, through their optimistic outlook and high activity levels, develop constructive responses regarding obligation, recog-

nition, and achievement (Mishra, 2020). Researchers have found that adopting sustainable practices, such as green human resource management, effectively enhances employee engagement (Mishra, 2020; Karatepe et al, 2022). Furthermore, a study has demonstrated that management's commitment to environmental sustainability positively influences green work engagement in organisations in Turkey and South Korea (Karatepe et al, 2022). However, McCunn and Gifford (2012) reported, in a study of a Canadian city's private-sector office building, that green design did not positively affect employee engagement or environmental attitudes and behaviours. These inconsistencies indicate a need to investigate how and under what conditions green organisational practices influence Gen Z engagement.

Based on the foregoing, this study aims to examine the role of green organisational climate in employee engagement within the Chinese hotel industry. Green organisational climate refers to the shared perceptions of employees and employers regarding the organisation's commitment to environmental sustainability values and practices (Tsai et al, 2017; Zientara and Zamojska, 2018). Thus, green organisational climate emerges as a critical firm-level attribute that can promote green-related outcomes, particularly green work engagement, encompassing vigour, dedication, and absorption. Green organisational climate may serve as a strong predictor of green work engagement. Studies by Tsai et al. (2017), Zientara and Zamojska (2018), and Mouro and Duarte (2021) demonstrate that green organisational climate positively influences a company's environmental practices and outcomes. However, none of these studies have specifically analysed the impact of green organisational climate on the three dimensions of employee engagement; this represents a significant gap in the current literature. Furthermore, few studies have been conducted in the hotel industry context, which is highly competitive due to consumer expectations and its significant economic role worldwide, particularly in China. Therefore, a practical gap remains regarding the Chinese hotel industry, a human-centred, service-oriented sector with a predominantly Gen Z workforce. Moreover, this industry in China is focusing on creating a sustainable work environment; accordingly, many hotel companies are striving to enhance a green organisational climate. Yet, limited research exists on the extent to which green organisational climate influences vigour, dedication, and absorption. Hence, the Chinese hotel industry is an appropriate context to examine the effects of green organisational climate on work engagement dimensions.

Addressing these gaps, this study first aims to investigate the relationship between green organisational climate and the dimensions of vigour, dedication, and absorption. Second, it explores the mediating role of green group cohesion (GGC) in the relationship between green organisational climate and employee engagement dimensions. Some studies suggest that sustainable practices im-

pact employee engagement through variables such as job satisfaction (Karadas and Karatepe, 2019), safety and availability (Rabiul et al, 2023), and team resources (Zheng and Wang, 2025). However, no research to date has examined the mediating effect of GGC on the link between green organisational climate and each engagement dimension. In addition, this study offers a theoretical clarification of technological turbulence's moderating role in the relationship between green organisational climate and vigour, dedication, and absorption among Gen Z employees in Chinese hotels.

2. Literature Review

2.1 Social Identity Theory (SIT)

SIT postulates that the behaviour and attitudes of employees are influenced by their perceived membership in social groups, thereby forming part of their self-concept (Tajfel, 1982; Turner and Oakes, 1986; Simbula et al, 2023; Rabiul, 2024). Accordingly, this study adopts the same framework, as it can clarify how a green organisational climate fosters a sense of belonging and identity among Gen Z employees (Das and Malik, 2024). Employees who perceive their workplace as environmentally responsible and socially conscious are more likely to connect with and align to the values of the company, which enhances their work engagement, i.e., vigour, dedication, and absorption (Ercantan and Eyupoglu, 2022). Consequently, they exhibit a higher level of psychological attachment to their work and resilience throughout their tenure, accompanied by substantial energy, i.e., vigour (Anaza and Rutherford, 2012; Karanika-Murray et al, 2015; Van et al, 2024). Moreover, their alignment, i.e., recognition of organisational green efforts by fostering a green organisational climate, inspires employees (i.e., Gen Z) to demonstrate increased enthusiasm and a sense of purpose, i.e., dedication (Gomes et al, 2023; Jnaneswar, 2024). This occurs because when employees perceive that their company implements green strategies and initiatives, their commitment strengthens, leading to enhanced dedication (Ercantan and Eyupoglu, 2022; Liao et al, 2020). Finally, SIT also enables us to posit that when Gen Z employees recognise organisational environmental efforts, i.e., a green organisational culture, they become more focused and engaged in the workplace.

SIT further supports arguments regarding the mediating role of GGC. Since younger generations, i.e., Gen Z, develop a shared identity grounded in environmental sustainability, their group cohesion intensifies (Bruner et al, 2014; Liao et al, 2020). As they are more motivated to pursue collective goals, this enhanced sense of belonging and shared purpose can increase their level of participation. In this context, SIT posits that when employees, i.e., Gen Z, identify with their group, they become more committed to actions and activities that benefit both themselves and the group, which can ultimately improve overall organisational performance. Therefore, examining the mediating

effect of GGC in the relationship between green organisational climate and the three dimensions of work engagement among Gen Z employees working in Chinese hotels is well supported by SIT propositions (Chalab and Moussa, 2022; Watanabe et al, 2024; Yu et al, 2022).

Moreover, we contend that SIT is appropriate to investigate the moderating influence of technological turbulence (Alnsour, 2024) on the relationship between GGC and work engagement dimensions. Gen Z employees may alter their social identities due to ongoing technological changes, particularly regarding their group cohesion (McKinsey and Company, 2024; Carnegie, 2022). There is limited research demonstrating whether technology enhances or undermines teamwork in promoting Gen Z employees' work engagement. Consequently, the impact of technology on group unity remains unclear. This study aims to determine if technological changes facilitate or impede the relationship between group cohesiveness and employee engagement, based on SIT.

The distinctive characteristics of younger employees, particularly those from Generation Z, such as their proficiency with technology and strong commitment to social and environmental concerns, illustrate how Social Identity Theory applies to this study. Researchers find that Gen Z employees demonstrate heightened sensitivity to sustainability matters (Wood, 2022). Existing research indicates that they are consequently more inclined to engage in the initiatives and practices of organisations that align with their values and principles, ultimately enhancing their work engagement (Deloitte, 2023; Surmacz et al, 2024). Therefore, fostering a green organisational climate is essential to engage Gen Z employees, as they are engaged where they perceive the environment is protected.

Overall, Social Identity Theory has provided a comprehensive framework to investigate how green organisational climates, green group cohesion, and technological turbulence affect Gen Z employees' work engagement in the hotel sector. This theory underscores the importance of cultivating a unified and supportive workplace environment if organisations aim to maintain employee engagement. Understanding the mechanisms through which organisational identity influences employee engagement will assist hotel management in devising integrated strategies for increased work engagement of Gen Z employees, thereby ensuring organisational success. The holistic perspective of SIT highlights the significance of both environmental awareness and collaboration in shaping occupational behaviours within a society increasingly focused on ecological concerns. Thus, grounded in SIT, this study ultimately offers contemporary insights based on thorough analysis of the complex interactions among the study variables, contributing to both scholarly literature and practice.

While SIT provides a valuable framework for analysing group-level identification and behaviour, it is important to critically acknowledge the limitations inherent in generational classifications. Generation theory, although widely employed, encounters conceptual challenges. Scholars have noted the subjectivity involved in defining generational boundaries, as cut-off dates vary across studies and cultural contexts (Parry and Urwin, 2011; Cubukcu Cerasi and Balcioglu, 2024). Furthermore, conceptualising generations like Gen Z as uniform groups risks oversimplification, disregarding the heterogeneity in values, experiences, and socioeconomic backgrounds within the cohort (Costanza et al, 2023). Such assumptions can lead to broad generalisations that neglect intra-generational differences. Despite these concerns, generational theory remains a valuable heuristic in organisational research, particularly when applied alongside theoretical models such as SIT that consider identity formation in relation to group values and organisational environments. Hence, although this study refers to Gen Z as a distinct group, it does so cautiously, acknowledging that individual and contextual variability should be accounted for when interpreting the findings.

Although this study does not directly investigate internal marketing or internal communication, these functions are critical enablers in shaping employees' perceptions of a green organisational climate. Internal marketing, defined as the internal exchange of value between an organisation and its employees to foster alignment and engagement (Brown, 2025), supports the dissemination of sustainability-related values and practices within the organisation. In the context of Gen Z employees—who prioritise environmental and social consciousness—effective internal communication and value-driven engagement strategies are particularly relevant. Recent research demonstrates that strong ESG communication and internal marketing initiatives substantially enhance Gen Z engagement levels. Therefore, while the central focus of this study remains on structural and environmental predictors of employee engagement, the role of internal communication in stimulating engagement through a shared sustainability narrative warrants acknowledgement and offers a promising direction for future research.

2.2 Green Organisational Climate and Employee Engagement Dimensions

Organisational climate is defined as the environment where individuals live and work and is acknowledged to influence behaviour and motivation to either enhance or restrict learning within their workplace (Maamari and Messarra, 2012; Agbejule et al, 2021). Moreover, organisational climate is described as "how it feels to work around here" (Mullins, 2010). Organisational climate is primarily acquired by an employee through interaction with other employees within the organisation (Koene et al, 2002; Dulay et al, 2015; Pérez-Vallejo and Fernández-Muñoz, 2019). Additionally, various interactions among employees in groups also contribute to learning the organisational climate. Since most workplace interactions occur at the work unit level,

"peers provide the primary source of sense-making information" (Priesemuth et al, 2014). However, the extent of administrative or institutional emphasis on specific policies also influences the formation of the climate. Therefore, management of a department in an organisation or the organisation as a whole establishes or ensures justice; consequently, an organisation cultivates a justice climate. In the context of a green organisational climate, the process is similar, where the manager or organisational leadership fosters a green organisational climate, which, to reiterate, is the collective perception or commitment of employees towards the environmental sustainability efforts of their company. Organisational green climate primarily involves environmental policies, management strategies (such as providing information, policy statements, and training to employees), and specific environmental activities, such as waste management, recycling, and chemical control (Chou et al, 2014).

Moreover, arguably the behaviour of an employee's immediate supervisor—a role typically fulfilled by line managers—is crucial to establishing an organisational climate (Novac and Bratanov, 2014; Swart et al, 2021). Line managers, group leaders, or supervisors generally engage in daily organisational activities in contrast to senior managers or executives. Hence, employees tend to focus more on the words and behaviours of immediate supervisors; consequently, employees learn the organisational climate from their immediate supervisors, i.e., line managers, group leaders, or managers (Carron et al, 1998). Supervisors assist their employees in understanding the rationale behind particular organisational initiatives. They serve as exemplars of these initiatives and provide motivation and information. Furthermore, they support their employees in adapting to the workplace environment beyond merely fulfilling their job responsibilities.

The inference is that, more precisely, it is termed organisational climate, which encompasses activities, environment, and values; thus, it reflects the behavioural and attitudinal responses organisations expect from employees. Therefore, organisational climate functions as a process to encourage employees to become engaged in their work so that they can contribute to the attainment of organisational objectives, goals, and performance (Kien and Konosu, 2021). In the hospitality sector, which is often criticised for its environmental impact, managers and senior organisational leaders are developing a green climate not only to mitigate environmental damage but also to improve the organisation's internal environment. Consequently, Gen Z employees may exhibit positive responses to sustainability-oriented workplaces (Ercantan and Eyupoglu, 2022; Gomes et al, 2023; Jnaneswar, 2024; Rabiul, 2024). Therefore, it is reasonable to expect that Gen Z employees who perceive themselves as working within a green organisational climate could be more engaged at work, demonstrating greater vigour, dedication, and absorption. However, re-

cent research by Nurfitriyana and Muafi (2023) indicated that green organisational climate does not affect organisational citizenship behaviour. These conflicting findings regarding the direct impact of green organisational climate on organisational employee outcomes raise an important question about whether the green organisational climate is consistently effective. Based on this, we propose the following hypotheses:

H1. Green organisational climate has a positive relationship with the vigour of Gen Z.

H2. Green organisational climate has a positive relationship with the dedication of Gen Z.

H3. Green organisational climate has a positive relationship with the absorption of Gen Z.

2.3 Mediating Role of Green Group Cohesion

Group cohesiveness is defined as the force that binds group members to their group and to one another (Guzzo and Shea, 1992). The tendency of a group to stick together and remain united in pursuit of its objectives reflects the dynamic process underlying it (Carron et al, 1998). Findings from several previous studies, i.e., Gao et al. (2021) and Ejaz et al. (2024), indicate that group cohesion is positively associated with various organizational outcomes; for instance, it was found to exert a positive effect on employee adaptive performance. Furthermore, group cohesion improves communication flow and ambidextrous behavior among employees (Ejaz et al, 2024). Additionally, Gao et al. (2021) found that group cohesion contributes to both physical and psychological well-being. Moreover, group cohesion mediates the relationship between surface-level group diversity and group helping behavior (Liang et al, 2015). It was also observed to have a mediating role in the relationship between deep-level group diversity of personality and group helping (Liang et al, 2015). Furthermore, Zhang and Hao (2022) reported that group cohesion mediated the association between emotional intelligence and group effectiveness. Liu (2024) found that mindful leadership significantly influences group performance through the mediating role of group cohesion. Based on these premises, we postulate that GGC can be positively related to the three employee engagement dimensions: vigour, dedication, and absorption. Hence, we propose the following hypotheses:

H4. GGC mediates the relationship between green organisational climate and vigour of Gen Z.

H5. GGC mediates the relationship between green organisational climate and dedication of Gen Z.

H6. GGC mediates the relationship between green organisational climate and absorption of Gen Z.

2.4 Moderating Role of Technological Turbulence

Technological turbulence denotes the intensified, evolving, and unpredictable technological environment within an industry and beyond, where cutting-edge technologies are introduced, rendering existing technologies
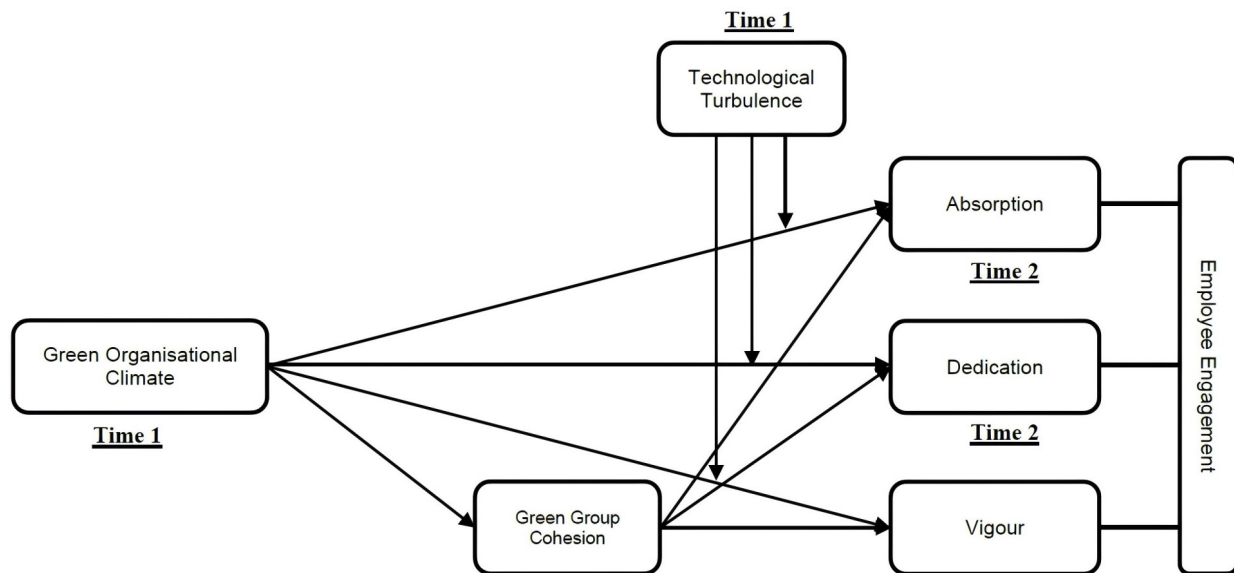
Fig. 1. Research framework.

and operations obsolete and compelling organizations to continuously implement and adapt to remain profitable and competitive (Yang et al, 2025; He and Wu, 2024). Technological turbulence positively moderates dynamic capabilities and exploratory innovation in small enterprises (He and Wu, 2024). Moreover, Technological turbulence (TT) moderates the relationship between knowledge management and innovation, particularly in fostering frugality (Bazyar et al, 2024). However, Chatterjee et al. (2021) reported that technological turbulence hinders the adoption of blockchain technology in manufacturing firms. Additionally, Alnsour (2024) found that technological changes adversely affect senior management's readiness to implement blockchain technology in Jordanian Islamic banks. Furthermore, Elfadel et al. (2024) observed that technological turbulence negatively moderates the relationship between e-product and e-place in the university context. Nonetheless, few studies in the existing literature offer insights into the moderating role of technological turbulence on the relationship between green organisational cohesion and the three dimensions of employee engagement. Similarly, limited research within the Chinese hotel industry addresses how market turbulence affects organisational employee-related outcomes, namely the relationship between green organisational climate and dimensions of employee engagement. Given the scarcity of studies on these relationships, market turbulence is incorporated as a factor influencing how the green organisational climate relates to employee engagement, following Jaworski's (1988) recommendation as cited by Bibi et al. (2018). Jaworski (1988) suggests that the effectiveness of various control mechanisms may depend on both external and internal factors, highlighting the importance of examining a variable that can impact this dynamic. Based on this rationale, we propose the following hypotheses:

H7. Technological turbulence moderates the relationship between green organisational cohesion and vigour of Gen Z.

H8. Technological turbulence moderates the relationship between green organisational cohesion and dedication of Gen Z.

H9. Technological turbulence moderates the relationship between green organisational cohesion and absorption of Gen Z.

Based on the literature and theoretical arguments mentioned above on the green organisational climate, green group cohesion, technological turbulence and employee engagement dimensions, we have developed the following research framework (See Fig. 1).

3. Methodology

3.1 Sampling and Data Collection

This study employed a convenience sampling technique to gather data from Generation Z employees currently working in 3- to 5-star hotels in Henan, China. Consistent with prior study (Trifan and Pantea, 2024), Generation Z was defined as individuals born between 1995 and 2010; consequently, we included only those within the conventional working age range (18 to 29 years) at the time of data collection in 2024. Particularly in service-oriented sectors such as hospitality, this generational classification captures shifts in workplace expectations and digital competency characterizing Gen Z workers. Convenience sampling was chosen and implemented in this study due to its multiple advantages; for instance, it enables researchers to conduct the survey expediently, obtaining responses from the target population (Cizrelioğulları and Babayiğit, 2022). This sampling approach is also cost- and time-efficient (Scholtz, 2021). Accordingly, we employed a drop-off and pick-up

data collection method during our two-wave collection process (Junod and Jacquet, 2023; Sakshaug, 2022). Consequently, we mitigated non-response bias concerns. In the first wave, we gathered demographic information and data on independent variables, moderator, and mediator; in the second wave, we collected only data related to the three dimensions of employee engagement: vigour, dedication, and absorption. In the first wave, 438 responses were received, of which 11 were incomplete or exhibited straightlining. The second wave yielded 391 responses, with 372 complete; thus, these were subjected to analysis. Following Hair et al. (2019), who recommend a minimum of 10 observations per indicator depending on model complexity, we determined an adequate sample size. Our model comprises nine constructs with approximately thirty indicators overall, necessitating a minimum of 300 responses to ensure sufficient statistical power. Our final sample of 372 valid responses exceeded this threshold, confirming the adequacy of the sample size for model estimation. It is pertinent to note that some respondents who participated in the initial survey either left the hotel or declined participation in the second wave when the survey questions were dropped. Ultimately, we analysed data based on the number of second-wave responses. We matched first- and second-wave survey responses using a unique code, generated from the respondent's first name and birthdate. This approach was adopted because, during the pilot study, respondents expressed discomfort sharing their full birth date or email address due to privacy concerns. However, the unique code enabled us to track responses from the same individual across both data collection waves.

3.2 Measures

The questionnaire comprised statements (listed in Table 1) derived from previous research. These statements were assessed using a five-point Likert scale ranging from "1" indicating negative sentiment, such as "Strongly Disagree", to "5" representing positive sentiment, such as "Strongly Agree", for the constructs of this study. Initially, the green organisational climate was evaluated using five items adapted from Maamari and Messarra (2012) and Fainshmidt and Frazier (2017) as employed in Agbejule et al. (2021). Green group cohesion was assessed using measures from Han et al. (2016), applied by Haque et al. (2024). Ullah et al. (2020) utilized four items from Jaworski and Kohli (1993) to assess technological turbulence. Finally, the three dimensions of employee engagement—vigour, dedication, and absorption—were measured through 16 items adopted from Schaufeli et al. (2002) and used in Teuber et al. (2021) and Guo et al. (2022).

3.3 Data Analysis

To analyse the collected data, we employed the partial least squares structural equation modeling (PLS-SEM) technique. We applied PLS-SEM in this study for two primary reasons. Firstly, our research is an exploratory investigation that aims to improve the prediction of the relationship between the green organisational climate and employee engagement dimensions within the hotel industry context (Hair et al, 2022; Islam and Ali Khan, 2024). In this context, Covariance based Structural Equation Modeling (CB-SEM) is predominantly used for confirmation or comparison purposes (Rigdon et al, 2017). Therefore, we chose PLS-SEM instead of CB-SEM. The second rationale for using PLS-SEM was the presence of a non-normal sample, as outlined in the following section. Consequently, data collected from the non-normal sample is more appropriate for PLS-SEM analysis rather than CB-SEM, which is designed for normally distributed data. Moreover, PLS-SEM has been frequently applied in social science research, particularly in studies related to the hotel industry (Sarstedt et al, 2021; Hair et al, 2022).

4. Results

4.1 Demographic Information

The results indicate that 77.7 percent of respondents in this study were male, with the remainder being female. Among 372 participants, 35.8% held a diploma-level qualification, 52.4% possessed an undergraduate degree, and the remainder had a postgraduate degree. Furthermore, 32.5% of respondents were employed in 3-star hotels, 33.3% in 4-star hotels, and the remainder worked in 5-star hotels.

4.2 Pilot Study and Common Method Bias

Prior to administering the main survey to respondents, we conducted a pilot study with 50 Gen Z employees. The survey was deemed clear and comprehensive, with no modifications required. We controlled for common method bias (CMB) using a two-wave data collection technique. Results indicated no CMB concerns, as evidenced by variance inflation factor (VIF) values in Table 1, ranging from 1.541 to 2.684. The recommended threshold for VIF is a maximum of 3.3; Table 1 demonstrates values below this limit. Therefore, no CMB issues are present in this study (Cheng et al, 2022). Additionally, our heterotrait-monotrait (HTMT) ratio analysis (see Table 3) showed no evidence of common method bias, with the highest value being 0.809, which is below the recommended cutoff of r > 0.90 (Nitzl et al, 2016).

4.3 Measurement Model

We assessed the internal consistency and reliability of the six constructs in this study using Composite Reliability (CR) and Cronbach's Alpha (CA), consistent with Hair et al. (2022). Both Table 1 and Fig. 2 present internal consistency results, where CA exceeds 0.7. Convergent validity is also established, with factor loadings and average variance extracted (AVE) exceeding 0.40 and 0.50, respectively.

Table 1. Measurement model.

| Constructs and items	Factor loading	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)	Variance inflation factor (VIF)
Vigour (VIGR)		0.882	0.914	0.680	
At my workplace, i.e., hotel, I feel bursting with energy.	0.840				2.130
At my workplace, I feel strong and vigourous.	0.850				2.375
When I get up in the morning, I feel like going to workplace.	0.845				2.317
At my job, I am very resilient, mentally.	0.799				1.905
I can continue working for very long periods in the hotel at a time.	0.788				1.874
Dedication (DEDC)		0.871	0.906	0.659	
My job inspires me.	0.838				2.255
I am enthusiastic about my job.	0.785				1.847
I find the work that I do full of meaning and purpose.	0.779				1.805
To me, my job is challenging.	0.835				2.251
I am proud of the work that I do.	0.822				2.069
Absorption (ABSP)		0.901	0.924	0.668	
I am immersed in my work.	0.822				2.187
When I am working, I forget everything else around me.	0.820				2.314
I feel happy when I am working intensely.	0.806				2.093
It is difficult to detach myself from my job.	0.834				2.268
I get carried away when I am working.	0.805				2.229
Time flies when I am working.	0.818				2.367
Technological Turbulence (TT)		0.900	0.930	0.769	
The technology in our industry is changing rapidly.	0.858				2.370
Technological changes provide big opportunities in our industry.	0.880				2.586
It is very difficult to forecast where the technology in our industry will be in the next 2 to 3 years.	0.886				2.663
Many new service ideas have been made possible through technological breakthroughs in the hotel industry.	0.883				2.603
Green Group Cohesion (GGC)		0.872	0.907	0.663	
In our hotel, people pitch in to help each other out in relation to green efforts.	0.752				1.931
In our hotel, people tend to get along with each other when it comes to achieve sustainable objectives.	0.851				2.747
In our hotel, people take a personal interest in one another specially in our green efforts.	0.806				2.038
There is a lot of 'green team spirit' among all the employees in our sustainability oriented workplace, i.e., hotel.	0.819				2.191
I feel like I have a lot of green ideas and efforts in common with the people in this hotel.	0.839				2.684
Green Organisational Climate (GOC)		0.877	0.911	0.672	
Our hotel recognises and rewards employees who make exceptional contribution to corporate environmental performance.	0.807				2.124
Employees in our hotel possess requisite environmental sustainability knowledge and skills.	0.852				2.423
Leadership of our hotel shows clear commitment to environmental sustainability issues.	0.858				2.554
Generally, the environmental sustainability efforts and performance of our hotel are significant.	0.830				2.273
Our hotel provides adequate resources to support effective delivery of corporate environmental performance.	0.745				1.541
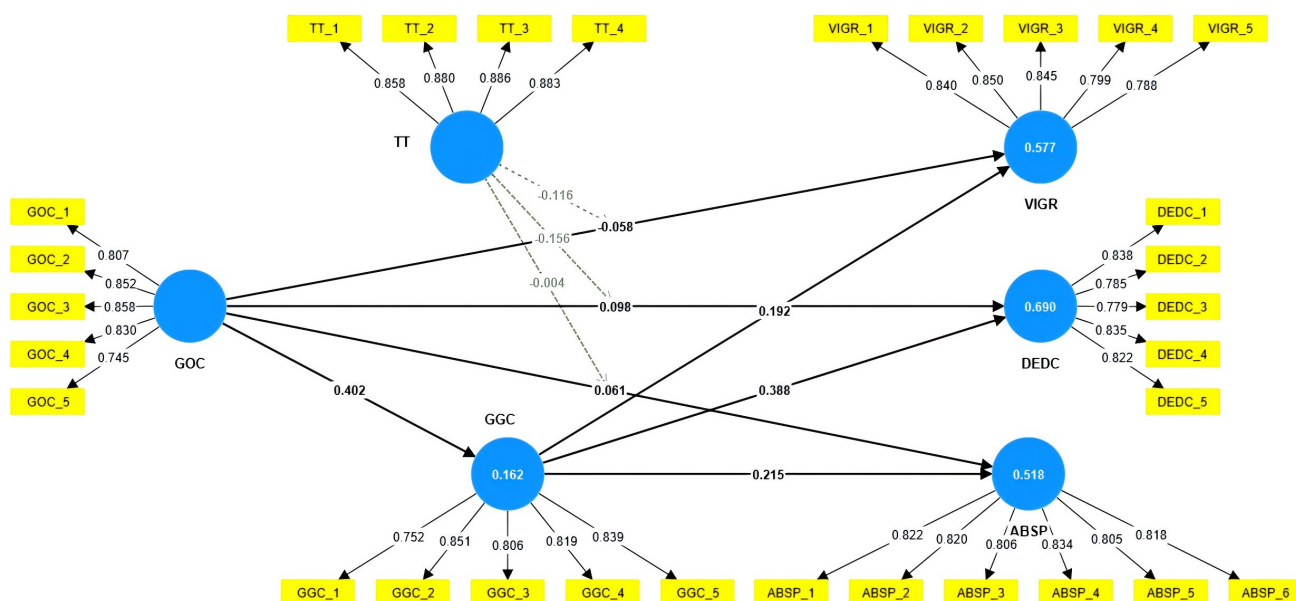
Fig. 2. Measurement model.

In this study, we evaluated two techniques for the verification of discriminant validity: the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT). Table 2 presents results showing that the diagonal values are always higher than the related correlation values, indicating strong discriminant validity. Moreover, the results in Table 3 for HTMT also show satisfactory correlations, as the ratio remains below 0.9. Thus, the correlations between latent variables fall under the maximum threshold of 0.9, confirming that the constructs in this study demonstrate adequate discriminant validity.

Table 2. Fornel Larcker.

	ABSP	DEDC	GGC	GOC	TT	VIGR
ABSP	**0.817**					
DEDC	0.604	**0.812**				
GGC	0.582	0.678	**0.814**			
GOC	0.451	0.574	0.402	**0.820**		
TT	0.699	0.718	0.656	0.576	**0.877**	
VIGR	0.591	0.639	0.571	0.447	0.724	**0.825**

Note: Values in bold represent the square root of Average variance extracted (AVE), which should be greater than all other values in its corresponding row and column. These values outline the correlations between constructs.

4.4 Hypothesis Testing Results

Table 4 and Fig. 3 present the findings. According to the analysis, the first three hypotheses regarding the relationships between green organisational climate and vigour, dedication, and absorption are rejected, as the p-value exceeds 0.05. Therefore, hypotheses 1, 2, and 3 are rejected.

Table 3. Heterotrait-monotrait (HTMT) ratio.

	ABSP	DEDC	GGC	GOC	TT	VIGR
ABSP						
DEDC	0.676					
GGC	0.651	0.772				
GOC	0.502	0.655	0.456			
TT	0.771	0.808	0.740	0.646		
VIGR	0.658	0.727	0.648	0.503	0.809	

However, the analysis indicates that GGC functions as a significant mediator in the relationship between green organisational climate and vigour, dedication, and absorption. In this regard, the fourth hypothesis, positing the mediating role of GGC in the relationship between green organisational climate and vigour, is accepted, with $\beta = 0.156$, $t = 4.392$, and $p = 0.000$. GGC plays a crucial role in linking green organisational climate and absorption, with $\beta = 0.077$, $t = 2.158$, and $p = 0.031$. Consequently, hypothesis 5 is accepted. Moreover, the results reveal that GGC mediates the relationship between green organisational climate and dedication, with $\beta = 0.086$, $t = 2.323$, and $p = 0.020$. Thus, hypothesis 6 is accepted. These findings demonstrate that green organisational climate does not exert a direct effect on vigour, dedication, and absorption; its positive and significant impact is mediated indirectly via GGC. Hence, GGC represents a significant mediator.

On the other hand, the results indicate that TT is a significant moderator with a negative effect on the relationship between GOC and vigour, as the β-value is –0.116, the t-value is 4.180, and the p-value is 0.000. Hence, hypothesis 7 was supported. TT was also identified as a significant mediator with a negative effect on the relationship between GOC and dedication, as the β-value was –0.156, the t-value
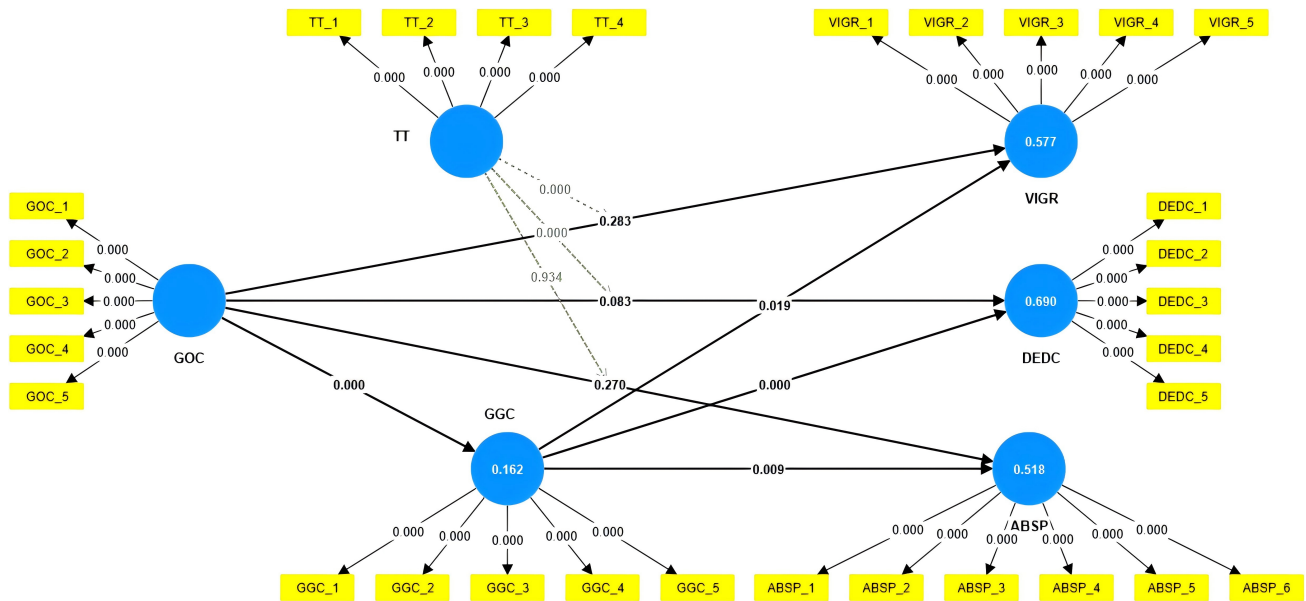
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Fig. 3. Structural model.

Table 4. Structural model.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	*p* values	Decision	Mediation
GOC→ABSP	0.061	0.060	0.056	1.102	0.270	Not Supported	
GOC→DEDC	0.098	0.107	0.057	1.733	0.083	Not Supported	
GOC →VIGR	−0.058	−0.055	0.054	1.074	0.283	Not Supported	
GOC→GGC→DEDC	0.156	0.156	0.035	4.392	0.000	Supported	Full mediation
GOC→GGC→VIGR	0.077	0.079	0.036	2.158	0.031	Supported	Full mediation
GOC→ GGC→ABSP	0.086	0.087	0.037	2.323	0.020	Supported	Full mediation
TT × GOC→VIGR	−0.116	−0.113	0.028	4.180	0.000	Supported	
TT × GOC→DEDC	−0.156	−0.153	0.031	5.029	0.000	Supported	
TT × GOC→ABSP	−0.004	−0.003	0.045	0.082	0.934	Not Supported	

was 5.029, and the *p*-value was 0.000. Therefore, hypothesis 8 was supported. However, TT was not found to moderate the relationship between GOC and absorption, as the β-value = –0.004, *t*-value = 0.082, and *p*-value = 0.934. Thus, hypothesis 9 was rejected.

5. Conclusion and Discussions

To investigate the direct and indirect influence of GOC on three employee engagement dimensions, vigour, dedication, and absorption, through the mediation of green group cohesion and moderation of technological turbulence, nine hypotheses were formulated. However, the results show that GOC does not directly influence the vigour, dedication, or absorption of Generation Z employees working in hotels (i.e., 3-star, 4-star, and 5-star hotels) in China. This aligns with previous studies, such as Nurfitriyana and Muafi (2023), who reported no significant effect of GOC on organisational commitment and organisational citizenship behaviour. However, the findings are not consistent with the studies of Tsai et al. (2017) and Mouro and Duarte (2021),

where GOC was found to be effective in promoting employees' green behaviour and pro-environmental behaviour in the hotel industry. Thus, this study shows that GOC alone cannot be accepted as a predictor of employee engagement. Hence, further research on the influence of green organisational climate relating to employee-related outcomes, especially employee engagement of young generation employees, i.e., Gen Z, in the hotel and other industries should be conducted.

Although this study did not find a direct role of GOC on employee engagement dimensions, it identified GGC as a significant mediator in these relationships. This accords with Liang et al. (2015), who found a mediating role of GGC between surface-level group diversity and group helping behaviour. Moreover, the results concur with Zhang and Hao (2022), who reported mediation of group cohesion in the relationship between emotional intelligence and group effectiveness. Our results also support Liu's study (2024), which found that group cohesion plays a crucial role in how mindful leadership affects group performance.

Hence, it is reasonable to argue that green organisational culture does not necessarily influence employee engagement dimensions directly; rather, the influence depends on the mediation of green group cohesion among Generation Z employees.

Moreover, this study found that technological turbulence is an important moderator of the relationship between GOC and the vigour and dedication of Generation Z employees in the hotel industry context, consistent with the studies of He and Wu (2024) and Bazyar et al. (2024). However, our findings indicate that, despite its importance as a moderator, technological turbulence negatively impacts these relationships, a finding that aligns with previous research. These results demonstrate how technological turbulence can reduce the influence of green organisational culture on both the vigour and dedication of the young generation. Therefore, it is crucial for the hotel industry to enhance group cohesion among young employees, as this research shows it can significantly and positively translate the influence of green organisational culture on vigour, dedication, and absorption. The findings align with those of Ullah et al. (2020), who reported that technological turbulence negatively influences the relationship between CRM adoption and organisational performance. However, our findings do not corroborate Martin et al. (2020), who reported a positive influence of technological turbulence in strengthening the relationship between marketing capabilities and marketing communication. Moreover, our results are inconsistent with Arora and Mittal (2024), who reported that technological turbulence positively moderates the relationship between organisational performance and innovative capability. Thus, the results of this study open opportunities for further investigation into the role of technological turbulence in relation to employee engagement.

6. Implications

6.1 Theoretical Implications

This study offers several theoretical implications. Firstly, the research incorporates a range of variables within a framework that has not been previously tested in the literature. By doing so, this study demonstrates how employee engagement dimensions are influenced by independent and intervening variables both among Gen Z employees in the hotel industry and more broadly. In this regard, prior studies have only examined the role of green organisational culture on pro-environmental behaviour (Tsai et al, 2017; Nurfitriyana and Muafi, 2023), yielding inconsistent findings. Thus, the role of green organisational culture in the context of vigour, dedication, and absorption among the new generation remains underexplored within the hotel industry. Consequently, the findings of this study, i.e., no direct relationship between green organisational culture and vigour, dedication, and absorption, provide fresh perspectives for scholars to pursue further research in this area.

Secondly, no previous research has investigated how indirect mechanisms, such as green group cohesion, may positively mediate the impact of green organisational culture on the three dimensions of employee engagement: vigour, dedication, and absorption. This is the first study to reveal that green organisational culture does not necessarily influence employee engagement dimensions, especially among Gen Z employees, unless green group cohesion is present. This represents a significant contribution to the existing literature, as prior scholars have acknowledged that proposing previously unexplored relationships constitutes a notable theoretical advancement (Whetten, 1989; Mukherjee et al, 2022).

Thirdly, this study demonstrates that technological turbulence is important but exerts a negative influence on the relationship between green group cohesion and the dimensions of vigour and dedication. These findings suggest that, while technological advancements can benefit companies, their use among the new generation of employees might disrupt internal social bonding and workplace engagement. Therefore, further research is warranted, especially in the hotel industry, where technology and environmental concerns have substantial influence.

Fourthly, this research contributes to the theoretical development of social identity theory (SIT) by offering insights into green organisational culture, employee engagement dimensions, green group cohesion, and technological turbulence. The results indicate that green group cohesion fully mediates the connection between green organisational culture and the engagement of Gen Z employees. This underscores the importance of social relationships and shared identity in enhancing work engagement among these employees. This aligns with SIT, which posits that employees derive part of their self-concept from group membership and tend to be more engaged in groups characterised by collective and social bonds. Hence, hotel organisations should prioritise fostering green group cohesion to increase employee engagement within the workplace.

6.2 Practical Implications

Our study also has several practical implications for managers, practitioners, and policymakers in the hotel industry regarding the development of employee engagement, particularly in the context of Gen Z. First, the results provide managers, practitioners, and policymakers with an understanding that green organisational culture cannot directly influence the vigour, dedication, and absorption of new generations of employees. Therefore, managers need to nurture green group cohesion within hotels so that green organisational culture can be more effectively utilised through the collective bonding of Gen Z employees, enhancing their vigour, dedication, and absorption. In this regard, given the service-oriented nature of hotel organisations and the capacity of the new generation to enhance guests' positive experiences, promoting green group

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cohesion can prove effective. Secondly, this study also found that technological turbulence negatively affects the relationship between green group cohesion and the vigour, dedication, and absorption of Gen Z employees in hotels. Thus, training on the utilisation of technologies in developing operational processes and employee functions can help accommodate technological advancement.

In conclusion, this research demonstrates that green group cohesion plays a critical role. We suggest that hotels should not only implement green policies and practices but also focus on strategies to strengthen group bonding that emphasises these green aspects. This approach would ultimately promote work engagement in hotels, which depend heavily on the new generation of employees. Finally, employers should adopt a cautious approach when implementing new technologies in hotels. Managers should ensure that employees, particularly Gen Z, are actively involved in the transition process by providing training and fostering open communication and flexibility so that employees remain engaged during technological integration within organisations.

7. Research Limitations and Future Directions

The present research makes several significant contributions to both theory and practice; however, it has some limitations. For example, the study was conducted within the Chinese hotel context. Therefore, future research should examine our model in other settings. Furthermore, this study did not consider cultural issues to maintain the scope manageable; hence, it has limitations in providing insights into how employees' cultural backgrounds influence their engagement in hotels. Consequently, future studies could incorporate cultural factors to offer new perspectives on how cultural dimensions affect employee engagement in the hospitality industry. Moreover, future research could employ longitudinal and experimental designs to gain deeper insights into causality and capture potential changes in employee engagement over time. Finally, we propose that the research model be tested by applying other theoretical frameworks, such as social exchange theory and expectancy theory.

Availability of Data and Materials

Data are available on request.

Author Contributions

WY designed the research study. WY performed the research. WL provided help and advice on research design. WL analyzed the data. WY wrote the manuscript. Both authors contributed to editorial changes in the manuscript. Both authors read and approved the final manuscript. Both authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

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