Journal of Information Systems Engineering and Management
2025, 10(1s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Mindful Innovations: Exploring Employee Mindfulness, Risk Attitude, and Participation in Sustainable Practices

Nidhi Srivastava[1], Kalidas Kaman[2], Niketa Munda[3].
[1]*Faculty of Commerce, Banaras Hindu University, Varanasi, India.*
nidhichitransh108@gmail.com
[2] *Institute of Management, Banaras Hindu University, Varanasi, India.*
kdkaman22@gmail.com
[3]*Institute of Management, Banaras Hindu University, Varanasi, India.*
Niketa.m@fmsbhu.ac.in
**Corresponding author Email: kdkaman22@gmail.com*

ARTICLE INFO

Received: 20 Oct 2024

Revised: 10 Dec 2024

Accepted: 28 Dec 2024

ABSTRACT

Introduction: In the face of mounting environmental challenges, organizations increasingly recognize the importance of employee engagement in driving sustainability initiatives. Employee mindfulness has emerged as a key factor influencing risk attitudes and participation, thereby fostering sustainable innovation and enhancing organizational performance.

Objectives: This study aims to investigate the role of employee mindfulness in promoting sustainable innovation. Specifically, it examines how mindfulness influences risk-taking attitudes and participation in sustainability efforts, contributing to organizational performance and reputation.

Methods: Data were collected through structured questionnaires distributed via surveys to employees in the Indian energy sector, chosen through purposive convenience sampling. A total of 441 valid responses were analyzed using Smart PLS-SEM to evaluate the relationships among mindfulness, risk attitudes, participation, and sustainable innovation.

Results: The analysis reveals that mindfulness significantly enhances employees' awareness, reflection, and willingness to take risks, enabling them to embrace uncertainties in sustainability initiatives. Furthermore, active participation in decision-making fosters a sense of ownership, which is critical for the successful implementation of sustainable innovations. Organizations that cultivate mindfulness among employees show improved engagement, performance, and reputation.

Conclusions: This study contributes to the theoretical understanding of mindfulness in workplace sustainability, with a particular focus on high-demand sectors like energy. It underscores the importance of mindfulness training to enhance employees' risk-taking and participation capabilities, thereby addressing sustainability challenges and securing a competitive advantage.

Keywords: Employee mindfulness, positive risk attitude, employee participation, sustainable innovations, organization culture.

1. INTRODUCTION

Organizations face mounting pressure to adopt sustainable practices amid environmental degradation and social accountability demands. Employee engagement in sustainability initiatives has become a cornerstone for success (Chanana & Singh, 2024), yet many organizations struggle to embed such practices due to limited employee awareness and participation. This misalignment hampers sustainability efforts, as employees' attitudes and behaviors significantly influence organizational outcomes (Kehoe & Wright, 2013).

Sustainable innovations strengthen competitive advantage, bolster reputation, and ensure long-term viability (Hayat & Qingyu, 2024). Mindful employees are pivotal in fostering such innovations, contributing creative solutions that

enhance organizational performance (Kremer et al., 2019). As stakeholders demand corporate responsibility, failure to engage employees risks reputational damage and market erosion (Alshukri et al., 2024). Understanding how mindfulness shapes employee engagement is crucial for aligning organizational goals with societal expectations (Khan, 2024).

Mindfulness entails focused awareness of the present moment, fostering thoughtful responses over impulsive reactions (Kabat-Zinn, 2003a). In organizations, mindfulness enhances creativity, collaboration, and decision-making, enabling employees to reflect on their actions' environmental and social impacts (Siqueira & Pitassi, 2016). Mindful employees engage more consciously, offering innovative ideas that propel sustainability initiatives and drive organizational change (Bloodgood & Morrow, 2003).

Risk attitude, an individual's propensity to embrace or avoid uncertainty, influences engagement with innovative solutions (Hillson & Murray-Webster, 2017). Employees with positive risk attitudes explore unconventional ideas and actively support sustainability initiatives (Ramus & Steger, 2000). Conversely, risk aversion can stifle innovation (Arundel, 2017). Examining how mindfulness interacts with risk attitudes provides insights into cultivating an innovative and sustainable workforce.

Employee participation reflects the extent of active involvement in decision-making and sustainability efforts. Meaningful participation fosters ownership and commitment, with mindful employees contributing insights and collaborating effectively (Hoon et al., 2012). Investigating how mindfulness and risk attitudes shape participation offers valuable guidance for enhancing employee engagement in sustainability.

Sustainable innovations—encompassing environmentally conscious products, services, and processes—address climate challenges and resource scarcity (Rosca et al., 2017). Beyond technical advancements, fostering a culture that empowers employee contributions is essential (Kumar & Raghavendran, 2015). Exploring the relationships between mindfulness, risk attitudes, and participation illuminates pathways for embedding sustainable innovations within organizations.

Despite extensive research on sustainability and employee engagement, gaps remain regarding the interplay of mindfulness, risk attitudes, and participation in sustainable innovation. This study addresses these gaps by exploring the influence of mindfulness on sustainable innovations, emphasizing the roles of risk attitudes and employee participation. By integrating mindfulness, risk attitudes, participation, and sustainability, this study advances understanding of employee engagement in sustainability efforts. It highlights the significance of mindfulness and participation in driving sustainability goals, providing insights for fostering a mindful and innovative workforce. These findings offer theoretical and practical guidance for embedding mindfulness within organizational strategies to address environmental and social challenges effectively.

2. THEORETICAL BACKGROUND AND CONCEPTUAL FRAMEWORK

This study investigates how employee mindfulness fosters sustainable innovations within organizations. Drawing on Mindfulness Theory (Kabat-Zinn, 2003), it argues that mindful employees, through heightened reflection and awareness, directly contribute to sustainability-focused solutions by enhancing creativity and problem-solving. Sustainable innovations, encompassing eco-friendly products, services, and processes, require such reflective engagement.

The Job Demands-Resources (JD-R) Model: Demerouti et al., (2001) positions mindfulness as a critical personal resource that enhances resilience and stress management in demanding roles, such as sustainability innovation. Employee participation, a vital job resource, complements mindfulness by fostering engagement and ownership. Mindful employees, being more present and aware, actively contribute to sustainability efforts, driving innovation through collaboration and shared responsibility.

The Theory of Planned Behavior (TPB): AJZEN, (1991) explains how mindfulness influences risk attitudes, a key mediator in this study. Mindful employees demonstrate higher tolerance for uncertainty and risk, crucial for overcoming innovation barriers like fear of failure. Through non-judgmental openness, they adopt calculated risks, exploring sustainable solutions and fostering a culture of creativity and experimentation.

Innovation Diffusion Theory (IDT): Rogers et al., (2014) underpins the adoption of sustainable innovations within organizations. Mindful employees accelerate this process by engaging deeply with new ideas and reducing resistance

to change. Employees with positive risk attitudes act as early adopters, championing sustainability-focused practices and innovations across the organization.

Conceptual Framework

This study integrates mindfulness, risk attitudes, and employee participation to illustrate their collective role in fostering sustainable innovations:

1. **Employee Mindfulness:** Mindfulness enhances present-moment awareness, reflection, and creativity, enabling employees to develop innovative, sustainable solutions. By promoting a thoughtful approach, mindfulness helps identify opportunities for sustainability in processes and decisions.

2. **Risk Attitude (Mediator):** Mindful employees, characterized by open-mindedness, embrace calculated risks essential for sustainability innovation. Positive risk attitudes encourage exploration of unconventional, sustainable solutions, breaking traditional barriers to change.

3. **Employee Participation (Mediator):** Participation in decision-making processes empowers employees, fostering ownership and engagement in sustainability efforts. Mindful employees, attuned to their work and values, actively contribute insights, drive collaboration, and share innovative ideas.

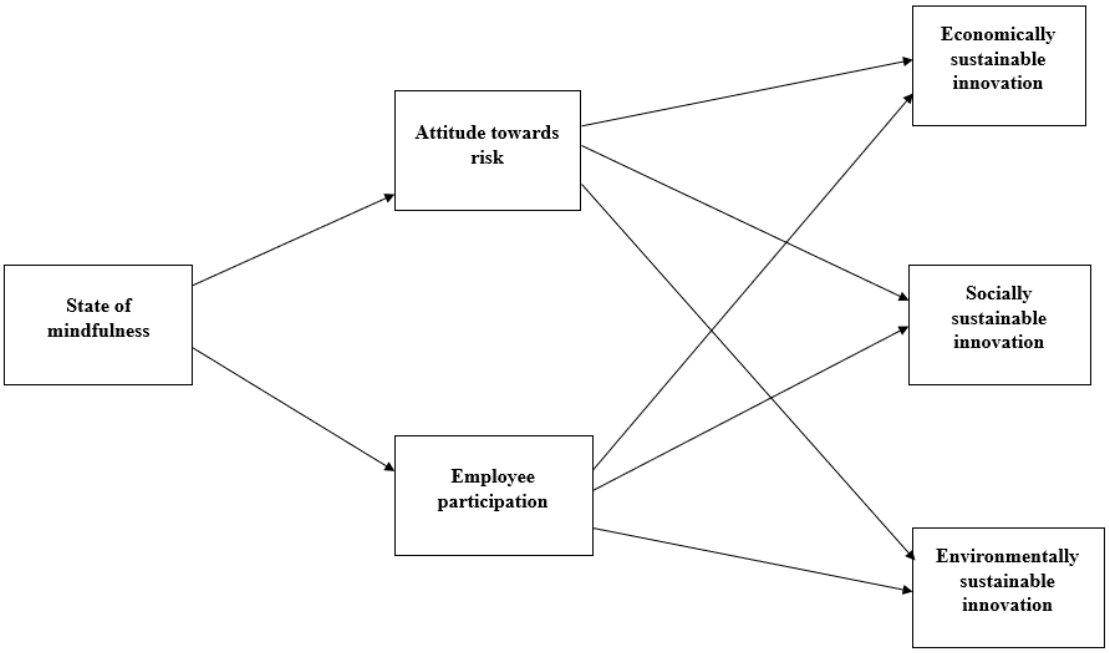

Figure 1: Conceptual Framework of the study

The framework presents a cohesive model linking mindfulness, risk attitudes, and participation to sustainable innovations (see figure 1). Mindful employees, open to risk and engaged in participatory processes, generate ideas aligned with organizational environmental and social goals. This approach not only enhances organizational performance but also drives long-term sustainability. By leveraging mindfulness and its mediators, organizations can cultivate a workforce capable of addressing complex sustainability challenges through innovation.

Research Hypotheses

A positive risk attitude fosters a culture of entrepreneurial initiative, encouraging the exploration of innovative solutions that enhance economic sustainability. Employees with a willingness to take calculated risks drive the development of cost-efficient processes, revenue-generating innovations, and strategic investments in high-growth opportunities. Such a mindset aligns organizational efforts toward competitive advantage, optimizing financial resources while ensuring long-term economic viability. We hypothesized:

H1: Employee positive risk attitude positively influence economically sustainable innovations

Employees with positive risk attitudes demonstrate a proactive approach to environmental challenges by embracing untested green technologies and sustainable practices (Nguyen, 2024). This propensity enables the organization to adopt eco-friendly processes and products that reduce ecological footprints (Nuryanto et al., 2024). Their openness to experimentation and adaptive thinking significantly contributes to environmentally sustainable innovations, fostering resilience in the face of environmental uncertainties. We hypothesized:

H2: Employee positive risk attitude positively influence environmentally sustainable innovations

A positive risk attitude encourages employees to challenge traditional norms and advocate for socially inclusive innovations (Neff, 2012). Such behaviors enhance the organization's ability to address societal issues, including equity, community development, and workplace diversity (Bond & Haynes, 2014). By embracing bold ideas and addressing complex social challenges, employees contribute to sustainable solutions that generate shared value across stakeholder groups. We hypothesized:

H3: Employee positive risk attitude positively influence socially sustainable innovations.

Employee participation in decision-making fosters a sense of ownership and accountability (Overbey & Gordon, 2017). Collaborative efforts encourage the pooling of diverse knowledge and expertise, leading to innovations that optimize resource allocation and maximize economic gains (Vivona et al., 2023). This inclusive approach aligns employee creativity with organizational objectives, ensuring financial sustainability. We hypothesized:

H4: Employee participation positively impact economically sustainable innovations

Active employee involvement empowers teams to co-create innovative solutions addressing environmental challenges (Ramaswamy, 2009). Participation promotes the integration of diverse perspectives, resulting in eco-efficient technologies, sustainable practices, and green product designs (Caiado et al., 2017). By leveraging collective insights, organizations enhance their capacity to implement environmentally sustainable innovations that align with regulatory and societal expectations. We hypothesized:

*H5: Employee participation positively impact environmentally sustainable innovation*s

Employee participation cultivates an inclusive environment where diverse viewpoints drive socially impactful innovation (Nishii & Rich, 2013). Engaging employees in decision-making enables the identification of pressing social issues and the co-development of solutions fostering equity, diversity, and community welfare (Peel, 2023). This collaborative approach ensures that social sustainability objectives are embedded in organizational practices and innovation strategies. We hypothesized:

H6: Employee participation positively impact socially sustainable innovations

A mindful state fosters heightened awareness, enabling employees to approach risks with clarity and confidence (Glomb et al., 2011. Mindfulness reduces impulsivity, allowing for a balanced evaluation of potential opportunities and challenges (Stratton, 2006). By promoting emotional regulation and resilience, mindfulness empowers individuals to embrace calculated risks, fostering a positive risk attitude essential for innovation and growth. We hypothesized:

H7: Employee state of mindfulness positively impacts positive risk attitude

Mindfulness enhances interpersonal sensitivity and communication, encouraging employees to actively engage in collaborative processes (Good et al., 2016). It fosters a non-judgmental awareness that supports open dialogue and constructive contributions (Aytac & Mizrachi, 2022). By cultivating presence and focus, mindfulness strengthens employees' willingness to participate meaningfully in decision-making and organizational initiatives. We hypothesized:

H8: Employee state of mindfulness (SM) positively impacts employee participation (PR)

Mindfulness enhances cognitive clarity and emotional regulation, fostering positive risk attitudes that encourage calculated decisions (Aumeboonsuke & Caplanova, 2021). This attitude bridges mindfulness and economically sustainable innovations by promoting strategic risk-taking aligned with financial goals (Eastburn & Sharland, 2017). Thus, mindfulness indirectly drives economic sustainability through its influence on risk perception and decision-making. We hypothesized:

H9: Positive risk attitude mediates the employee state of mindfulness and economically sustainable innovations.

Mindful employees exhibit a heightened awareness of environmental implications, shaping a positive risk attitude that prioritizes eco-friendly solutions (Shah & Asghar, 2024). This mediating role connects mindfulness to environmentally sustainable innovations, ensuring risk-taking aligns with ecological values (Marian et al., 2024). Consequently, mindfulness indirectly fosters environmental sustainability through risk-oriented decisions. We hypothesized:

H10: Positive risk attitude mediates the employee state of mindfulness and environmentally sustainable innovations

Mindfulness cultivates empathy and ethical considerations, fostering a positive risk attitude toward initiatives benefiting social welfare (Sajjad & Shahbaz, 2020). This attitude mediates the relationship between mindfulness and socially sustainable innovations by facilitating purposeful, risk-informed actions (Johnston, 2015). As a result, mindfulness indirectly contributes to social sustainability through its influence on risk-taking behavior. We hypothesized:

H11: Positive risk attitude mediates the employee state of mindfulness and socially sustainable innovations

Mindfulness fosters enhanced awareness and collaborative intent among employees, encouraging active participation in decision-making (Kay & Skarlicki, 2020). This participation amplifies the economic outcomes of organizational initiatives by aligning innovative processes with financial sustainability (Alshukri et al., 2024). Thus, mindfulness indirectly drives economically sustainable innovations through its influence on employee engagement. We hypothesized:

H12: Employee participations mediate the employee state of mindfulness and economically sustainable innovations

Mindful employees are more likely to engage in participative behaviors that prioritize environmental objectives (Smith & O'Sullivan, 2012). Participation fosters collective problem-solving and the implementation of green practices, linking mindfulness to environmental sustainability (Sajjad & Shahbaz, 2020). Hence, mindfulness indirectly supports environmentally sustainable innovations by stimulating active employee involvement. We hypothesized:

H13: Employee participations mediate the employee state of mindfulness and environmentally sustainable innovations

Mindfulness enhances interpersonal awareness and social responsibility, motivating employees to participate in socially impactful initiatives (Sajjad & Shahbaz, 2020). This participation fosters the development of innovations that address social challenges, connecting mindfulness to social sustainability (Wamsler et al., 2018). Consequently, mindfulness indirectly contributes to socially sustainable innovations through its role in fostering participative engagement. We hypothesized:

H14: Employee participations mediate the employee state of mindfulness and socially sustainable innovations.

3. METHODOLOGY

A. Research Design

Descriptive research is adopted for this study because it seeks to depict the attributes of employee state of mindfulness without altering them (Shields & Rangarajan, 2013). This aligns with the study's goals of examining the impact of employee mindfulness on sustainable innovations, focusing on the roles of risk attitude and employee participation.

B. Measurement

The measurement scales for employee state of mindfulness, attitude towards risk, employee participation, and sustainable innovations were adapted from established studies (refer to Table 1).

Table 1: Measurement of items of the constructs			
Constructs	Measurement Items	Label	References
Attitude towards risk	If individuals in my organization make an error, they will usually try to cover it up.	ATR1	(Ghosh & Srivastava, 2014)
	There are 'holy cows' that seldom get questioned.	ATR2	
	Most members believe in maintaining status quo.	ATR3	
	In our meetings most decisions are expected to be finally taken by the boss.	ATR4	
	If I do not agree with my supervisor, I feel comfortable voicing my views.	ATR5	
Economically sustainable innovation	Over the past few years, our company has consistently increased expenditure for process innovations which provide environmental and social benefits.	ECO1	(Calik & Bardudeen, 2016)
	Over the past few years, our company has consistently developed and commercialized new products that provide environmental and social benefits.	ECO2	
	Over the past few years, our company has improved the manufacturing processes effectively to reduce the use of raw materials.	ECO3	
Environmentally sustainable innovation	Our new products consume less energy during product usage than those of our competitors.	ENV1	(Calik &Bardudeen, 2016)
	Our manufacturing processes effectively reduce the emission of hazardous substances or waste more than those of our competitors.	ENV2	
	Over the past few years, our company has the actively improved manufacturing process capability to reuse and remanufacture components.	ENV3	
	Over the past few years, our company has redesigned and improved our products to meet new environmental criteria or directives.	ENV4	
Employee participation	Everybody is encouraged to participate in meetings	PAR1	(Ghosh & Srivastava, 2014)
	In meetings we seek to understand everyone's Viewpoint.	PAR2	
	Members are prepared to challenge assumptions of the group.	PAR3	
	Speaking out the truth, even if it is bitter, is Encouraged.	PAR4	

State of mindfulness	Noticed pleasant and unpleasant emotions.	SMS1	(Tanay &Bernstein, 2013)
	I felt that I was experiencing the present moment fully.	SMS10	
	I tried to pay attention to pleasant and unpleasant sensations.	SMS11	
	It was interesting to see the patterns of my thinking.	SMS12	
	I noticed many small details of my experience.	SMS13	
	I noticed thoughts come and go.	SMS14	
	I found some of my experiences interesting.	SMS15	
	I noticed pleasant and unpleasant thoughts.	SMS2	
	I noticed emotions come and go.	SMS3	
	I felt closely connected to the present moment.	SMS7	
	I had moments when I felt alert and aware.	SMS8	
Socially-sustainable Innovation	Process Over the past few years, our company has actively designed and improved our production process to reduce rates of injury, occupational diseases, and work-related fatalities.	SOS1	(Bonham et al., 2004)
	Product Over the past few years, return and recall rate off of our products have decreased consistently.	SOS2	
	Ergonomic Product Our new products are perceived by consumers as more ergonomic than those of our competitors.	SOS3	

These scales were customized and refined to suit the specific context of this study. All constructs were evaluated using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Control variables such as gender, age, and educational level were included due to their known influence on shopping behaviors (Hernández et al., 2011; Magno & Cassia, 2024).

C. Sample and Data Collection

Data collection involved using structured questionnaires distributed through surveys, chosen for their efficiency and cost-effectiveness in reaching a broad and diverse population (Manfreda & Vehovar, 2015). The target group comprised Indian energy sectors employees, identified through a screening question in the survey to ensure they are working in the field. Purposive convenience sampling was utilized to gather responses from a varied group of employees when a specific sampling frame was unavailable (Emerson, 2015; Hickman et al., 2020).

With a pressing need to balance economic growth, environmental sustainability, and social equity, Indian energy sector faces complex challenges requiring innovative solutions (Falcone, 2023). Employees' mindfulness, risk attitudes, and participatory behaviors are pivotal in addressing these challenges, given the sector's dependence on

strategic decision-making, resource optimization, and technological advancements. Furthermore, the sector's diverse workforce and its alignment with global sustainability goals provide a rich context for examining the interplay between individual and organizational factors in driving sustainable innovations. Therefore, this study chosen the sector as area of this study.

Initially receiving 451 responses, 441 valid responses were identified after filtering out incomplete or hastily completed submissions. Demographic characteristics of the sample are outlined in Table 2.

Table 2: Demographic information of the samples

Demographic Factors	Segment	Frequency
Gender	Male	227
	Female	214
Age	20-30	56
	30-40	176
	40-50	125
	50+	84
Educational Level	Up to high school	80
	Graduate	267
	Postgraduate and above	94

D. Data Analysis and Results:

As per the research objectives to examine the measurement and structural models, the component-based structural equation modelling (SEM) technique known as partial least squares (PLS) was employed, specifically using the SmartPLS 4 software package. This analysis examining the impact of employee mindfulness on sustainable innovations, focusing on the roles of risk attitude and employee participation.

PLS is advantageous because it requires a minimal sample size and can handle nominal, ordinal, and interval-scaled variables (Chin et al., 1998). It is particularly useful for identifying differences between groups when the data do not follow a normal distribution (Hair et al., 2019; Sarstedt & Ringle, 2010). PLS is the most prevalent and widely used estimation method in employees and organizational studies published in leading research journals (Guenther et al., 2023; Hair et al., 2012). Further, it has evolved into a comprehensive estimator for SEM, suitable for confirmatory, explanatory, exploratory, descriptive, and predictive research (Guenther et al., 2023; Henseler, 2018; Lutfi et al., 2023).

E. Measurement Model:

This study assessed the measurement model concerning convergent validity, reliability, and overall construct validity, as summarized in Table 3. The analysis includes Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) for each construct within the reflective model.

Table 3: Convergent validity and reliability analysis

Constructs	Items	Factors Loading	Mean	CR	AVE	Cronbach's alpha
Attitude towards risk	ATR1	0.839	4.372	0.901	0.704	0.895
	ATR2	0.836	4.155			
	ATR3	0.871	4.239			
	ATR4	0.839	4.128			
	ATR5	0.808	3.891			
Economically	ECO1	0.907	3.787	0.899	0.832	0.899

sustainable innovation	ECO2	0.926	3.727			
	ECO3	0.903	3.674			
Environmentally sustainable innovation	ENV1	0.869	4.002	0.913	0.792	0.912
	ENV2	0.915	4.036			
	ENV3	0.902	4.041			
	ENV4	0.872	4.019			
Employee participation	PAR1	0.766	3.568	0.809	0.619	0.795
	PAR2	0.793	3.229			
	PAR3	0.866	3.872			
	PAR4	0.714	4.036			
State of mindfulness	SMS1	0.652	3.686	0.913	0.524	0.908
	SMS2	0.615	3.355			
	SMS3	0.688	3.169			
	SMS7	0.788	3.800			
	SMS8	0.755	3.829			
	SMS10	0.705	3.483			
	SMS11	0.735	4.010			
	SMS12	0.821	4.034			
	SMS13	0.783	3.928			
	SMS14	0.764	3.845			
	SMS15	0.620	3.988			
Socially-sustainable innovation	SOS1	0.821	3.512	0.895	0.757	0.843
	SOS2	0.877	3.671			
	SOS3	0.910	4.063			

The State of Mindfulness construct, measured with 15 items (SMS1–SMS15), initially showed satisfactory outer loadings, except for SMS4, SMS5, SMS6, and SMS9. These items were excluded to enhance factor loadings, resulting in loadings ranging from 0.615 to 0.821. Despite some loadings below 0.7, the construct showed high reliability with a Cronbach's alpha of 0.908, CR of 0.913, and AVE of 0.524, meeting validity thresholds.

Attitude Towards Risk was evaluated using five items (ATR1–ATR5), all with loadings between 0.808 and 0.871, confirming reliability. The construct demonstrated strong internal consistency (Cronbach's alpha: 0.895, CR: 0.901) and convergent validity (AVE: 0.704), meeting required thresholds. Employee Participation, assessed with four items (PAR1–PAR4), showed loadings of 0.714 to 0.866. While slightly lower, reliability was acceptable, with a Cronbach's alpha of 0.795, CR of 0.809, and AVE of 0.619, supporting validity.

Economically Sustainable Innovation comprised three items (ECO1–ECO3) with strong loadings (0.903–0.926). Reliability and validity were confirmed with a Cronbach's alpha and CR of 0.899, and an AVE of 0.832, indicating substantial variance capture. Environmentally Sustainable Innovation was evaluated with four items (ENV1–ENV4), achieving high loadings (0.869–0.915). Reliability measures (Cronbach's alpha: 0.912, CR: 0.913) and AVE (0.792) confirmed excellent internal consistency and validity. Socially Sustainable Innovation included three items (SOS1–SOS3) with loadings from 0.821 to 0.910. The construct demonstrated strong reliability (Cronbach's alpha: 0.843, CR: 0.895) and convergent validity (AVE: 0.757).

Table 4: Discriminant validity analysis

HTMT Ratio						
	ATR	ECO	ENV	PAR	SMS	SOS
ATR						
ECO	0.501					
ENV	0.651	0.684				
PAR	0.562	0.463	0.558			
SMS	0.660	0.600	0.750	0.637		
SOS	0.592	0.733	0.778	0.492	0.683	
Fornell–Larcker's criterion						
Constructs	ATR	ECO	ENV	PAR	SMS	SOS
ATR	0.839					
ECO	0.458	0.912				
ENV	0.597	0.619	0.890			
PAR	0.477	0.402	0.482	0.787		
SMS	0.615	0.542	0.686	0.557	0.724	
SOS	0.544	0.637	0.698	0.426	0.607	0.870

Discriminant validity ensures that constructs within a model are distinct and not excessively correlated with one another. In this study, discriminant validity was assessed using both the HTMT (Heterotrait-Monotrait) ratio and the Fornell-Larcker criterion, as shown in Table 4.

The HTMT ratio is a widely recognized method for evaluating discriminant validity, where values below 0.90 suggest that constructs are adequately distinct. In this analysis, all HTMT values remain below the 0.90 threshold, reinforcing the conclusion that the constructs exhibit sufficient discriminant validity. For instance, the HTMT value between Attitude Towards Risk (ATR) and Economically Sustainable Innovation (ECO) is 0.501, and between Environmentally Sustainable Innovation (ENV) and State of Mindfulness (SMS), it is 0.750. Additionally, the HTMT value between Socially Sustainable Innovation (SOS) and Environmentally Sustainable Innovation (ENV) is 0.778. These results indicate clear distinctions among the constructs, and none of the HTMT values exceeds the threshold of 0.90, confirming adequate discriminant validity across the constructs.

In conjunction with the HTMT analysis, the Fornell-Larcker criterion was applied to further validate discriminant validity. According to this criterion, the square root of the Average Variance Extracted (AVE) for each construct should exceed the correlations between that construct and any other construct. As presented in Table 4, this criterion is satisfied across all constructs. For example, the square root of the AVE for Attitude Towards Risk (ATR) is 0.839, while its correlations with other constructs (such as 0.458 with ECO, 0.597 with ENV, and 0.477 with PAR) are lower than this value. Similar findings are observed for the other constructs, including Economically Sustainable Innovation (ECO) with an AVE of 0.912, which is higher than its correlations with ATR (0.458), ENV (0.619), and others. This trend continues for all constructs, where the square root of AVE consistently surpasses the correlations with other constructs, confirming their distinctiveness.

F. Structure Model

The proposed hypotheses were tested using SmartPLS4 with an adequate measurement model. Figure 2 depicts the structural model's results, which explained 37.80%, 31.10%, 25.30%, 33.20 and 40.70% of the variance in risk attitude, employee participation, economically, socially, and environmentally sustainable innovations respectively.

Table 5: Results of hypothesis testing

Hypotheses	Relationship	Path co-efficient	Standard deviation	T Values	P values	Decisions
Direct effect						

H1	ATR -> ECO	0.345	0.054	6.370	0.000	Accepted
H2	ATR -> ENV	0.475	0.054	8.824	0.000	Accepted
H3	ATR -> SOS	0.442	0.056	7.877	0.000	Accepted
H4	PAR -> ECO	0.238	0.054	4.434	0.000	Accepted
H5	PAR -> ENV	0.256	0.048	5.289	0.000	Accepted
H6	PAR -> SOS	0.215	0.053	4.074	0.000	Accepted
H7	SMS -> ATR	0.615	0.038	16.065	0.000	Accepted
H8	SMS -> PAR	0.557	0.040	14.093	0.000	Accepted
Mediation effect						
H9	SMS -> ATR -> ECO	0.212	0.039	5.491	0.000	Accepted
H10	SMS -> ATR -> ENV	0.292	0.043	6.773	0.000	Accepted
H11	SMS -> ATR -> SOS	0.272	0.042	6.459	0.000	Accepted
H12	SMS -> PAR -> ECO	0.133	0.033	3.964	0.000	Accepted
H13	SMS -> PAR -> ENV	0.142	0.032	4.508	0.000	Accepted
H14	SMS -> PAR -> SOS	0.120	0.033	3.606	0.000	Accepted

The hypothesis testing results in Table 5 confirm significant relationships among constructs, illustrating the factors influencing sustainable innovation across dimensions.

For direct effects, all hypotheses (H1–H8) were supported. Attitude Towards Risk (ATR) positively impacts Economically Sustainable Innovation (ECO) ($\beta = 0.345$, $p < 0.001$), Environmentally Sustainable Innovation (ENV) ($\beta = 0.475$, $p < 0.001$), and Socially Sustainable Innovation (SOS) ($\beta = 0.442$, $p < 0.001$). This suggests that a positive risk attitude enhances engagement in sustainable innovation across all dimensions. Participation (PAR) also positively affects ECO ($\beta = 0.238$, $p < 0.001$), ENV ($\beta = 0.256$, $p < 0.001$), and SOS ($\beta = 0.215$, $p < 0.001$), emphasizing the importance of active involvement in driving sustainability.

A strong positive relationship exists between the State of Mindfulness (SMS) and both ATR ($\beta = 0.615$, $p < 0.001$) and PAR ($\beta = 0.557$, $p < 0.001$). This underscores the role of mindfulness in fostering risk-taking attitudes and encouraging participation, both of which facilitate sustainable innovation.

For mediation effects, all hypotheses (H9–H14) were supported. ATR mediates the relationship between SMS and ECO (H9: $\beta = 0.212$, $p < 0.001$), ENV (H10: $\beta = 0.292$, $p < 0.001$), and SOS (H11: $\beta = 0.272$, $p < 0.001$). These findings indicate that mindfulness enhances risk attitudes, leading to improved sustainable innovation outcomes.

PAR also mediates the relationship between SMS and sustainable innovation. Specifically, PAR mediates SMS and ECO (H12: $\beta = 0.133$, $p < 0.001$), ENV (H13: $\beta = 0.142$, $p < 0.001$), and SOS (H14: $\beta = 0.120$, $p < 0.001$). These results highlight that mindful individuals, through active participation, promote sustainable innovations in economic, environmental, and social dimensions.

4. DISCUSSION OF THE RESULT

The results concerning the measurement model have been encouraging, with all constructs demonstrating strong convergent validity and reliability. The State of Mindfulness construct, initially represented by 15 items, was refined through the removal of four items that did not meet the required factor loading threshold. The remaining items exhibited factor loadings ranging from 0.615 to 0.821, with a Cronbach's alpha of 0.908 and a Composite Reliability (CR) of 0.913, indicating high internal consistency. This underscores the importance of mindfulness in fostering an engaged workforce capable of contributing to sustainable practices. The Average Variance Extracted (AVE) of 0.524 confirms that this construct adequately captures the intended variance, reinforcing the theoretical foundation laid out in the Conceptual Framework.

Similarly, the Attitude Towards Risk construct showed robust reliability, with factor loadings between 0.808 and 0.871 and an AVE of 0.704. This aligns with the Theory of Planned Behavior, which posits that positive risk attitudes, supported by mindfulness, enhance the likelihood of engaging with sustainability initiatives. The positive correlation between mindfulness and risk attitude suggests that mindful employees are not only more aware but also more inclined to take calculated risks in support of innovative practices.

Employee Participation, measured through four items, yielded satisfactory results with factor loadings from 0.714 to 0.866. Although these values were slightly lower than those of other constructs, the Cronbach's alpha of 0.795 and CR of 0.809 indicate acceptable reliability. This finding underscores the role of employee participation as a critical resource in fostering a culture of sustainability within organizations. Mindful employees are likely to feel more empowered and engaged, leading to increased participation in decision-making processes, as highlighted in the Job Demands-Resources (JD-R) Model. By actively involving employees in sustainability initiatives, organizations can cultivate a sense of ownership that drives commitment and innovation.

The results for the various dimensions of Sustainable Innovations—economically, environmentally, and socially sustainable innovations—indicate strong construct validity. The Economic Sustainable Innovation showed factor loadings from 0.903 to 0.926, while Environmentally Sustainable Innovation ranged from 0.869 to 0.915. The high Cronbach's alpha values (0.899 and 0.912) and AVEs (0.832 and 0.792) affirm that these constructs effectively capture the nuances of sustainability within organizational contexts. These findings are crucial, as they reflect that employee mindfulness, influenced by their risk attitudes, can lead to innovative solutions that not only reduce environmental impact but also enhance economic viability and social responsibility.

The findings of this study highlight the significant interplay between employee mindfulness, risk attitude, and participation in fostering sustainable innovations. By nurturing mindfulness within the workforce, organizations can enhance participation and encourage a positive risk attitude, thereby facilitating the development of innovative solutions that align with sustainability goals. As companies face growing pressure to demonstrate corporate responsibility, understanding and leveraging these dynamics will be vital for achieving both environmental and organizational objectives.

5. IMPLICATION

A. Theoretical Implications:

This study enhances the theoretical understanding of workplace mindfulness by demonstrating its role in driving sustainable innovation. Integrating concepts from Mindfulness Theory, the Job Demands-Resources (JD-R) Model, the Theory of Planned Behavior (TPB), and Innovation Diffusion Theory (IDT), the research provides a robust framework linking mindfulness to organizational sustainability. Mindfulness improves employees' stress management, focus, and promotes risk-taking attitudes and participation, critical for fostering sustainable innovation.

The study extends the JD-R Model by identifying mindfulness as a personal resource that bolsters resilience and creativity in high-demand environments. This extension is particularly relevant for sustainability contexts, where managing complex challenges is key to innovation. Additionally, TPB reinforces the role of attitudes and perceived behavioral control, with risk attitudes influencing employees' willingness to engage in sustainability-driven innovation.

Through IDT, the research reveals that mindful employees act as early adopters of sustainable practices, facilitating smoother adoption and reducing resistance to change. This highlights the collective role of mindfulness in accelerating the diffusion of sustainability practices within organizations.

B. Practical Implications

Organizations face challenges with low employee engagement in sustainability initiatives (Nandan & Jyoti, 2020). This study identifies mindfulness as a solution, as mindful employees consider long-term impacts and propose innovative solutions. Mindfulness training programs (e.g., MBSR) can enhance employee focus and creativity, driving sustainable innovation aligned with company values (Kabat-Zinn, 2003). Additionally, fostering mindfulness cultivates a sense of ownership and responsibility toward sustainability goals (Rezapouraghdam et al., 2019).

Employees often hesitate to engage in sustainability efforts due to perceived risks and uncertainties (Sharari et al., 2024). The study shows that mindfulness improves risk attitudes, promoting comfort with uncertainties. To address this, organizations should build a culture of mindful risk-taking and ensure psychological safety (Elsayed et al., 2023). Managers can facilitate this by promoting cross-functional teams and feedback loops to encourage collaboration on sustainability projects (Ewim et al., 2024).

Employee participation is crucial for implementing sustainable innovation, yet engagement often suffers due to limited decision-making roles. The research indicates that mindfulness and positive risk attitudes empower employees to contribute meaningfully. To enhance participation, organizations should link sustainability objectives to performance reviews, offer incentives, and involve employees in sustainability strategy decisions (Epstein & Roy, 2001). Platforms like suggestion systems and sustainability committees foster collaboration and commitment (Klettner et al., 2014).

Lastly, mindful leadership plays a pivotal role in cultivating an innovative, sustainability-focused culture. Leaders who model mindfulness can motivate employees and align organizational values with sustainability goals. Policies that allocate resources and provide training reinforce this commitment, improving organizational reputation and attracting socially conscious talent and customers. A mindful workforce can drive sustainable solutions, positioning organizations as leaders in sustainability and enhancing their competitive edge.

6. CONCLUSION

Mindfulness emerges as a vital psychological resource that enhances emotional regulation, creativity, and collaboration among employees. By cultivating a mindful workforce, organizations can empower employees to engage more meaningfully with sustainability initiatives, fostering innovative solutions that align with both organizational values and societal expectations.

Moreover, the positive correlation between employee mindfulness and risk attitude highlights the importance of promoting a culture that encourages calculated risk-taking. Mindful employees demonstrate a greater willingness to embrace uncertainty, which is essential for exploring unconventional ideas and fostering creativity in sustainability efforts. This mindset can significantly reduce the barriers to adopting new sustainable practices and technologies, thereby facilitating the diffusion of innovative solutions throughout the organization.

The study also reveals that active employee participation is crucial for the successful implementation of sustainability initiatives. Mindful employees are more likely to feel a sense of ownership over sustainability goals, leading to increased engagement in decision-making processes. Organizations that integrate employee input into their sustainability strategies can enhance commitment and foster a culture of collaboration, driving collective efforts toward achieving sustainability objectives (Galpin et al., (2015).

Organizations must invest in mindfulness training and create supportive environments that promote psychological safety and participation. Leaders play a pivotal role in modeling mindful behaviors and encouraging risk-taking within teams, which can lead to a more engaged workforce capable of tackling complex sustainability challenges (Jerab, 2023). By implementing inclusive strategies that prioritize mindfulness and participation, organizations can harness their employees' innovative potential, ultimately positioning themselves as leaders in sustainable innovation and enhancing their competitive advantage in an increasingly conscientious market.

This study highlights that integrating mindfulness, risk attitudes, and employee participation into organizational frameworks is essential for fostering sustainable innovations. By prioritizing these factors, organizations can not only

improve their sustainability outcomes but also create a culture of innovation that empowers employees to contribute meaningfully to a more sustainable future. The insights gained from this research provide a roadmap for organizations seeking to enhance their sustainability efforts through a mindful, engaged, and innovative workforce.

Ethics Declaration:

This study adheres to the highest ethical standards in research, ensuring integrity, transparency, and accountability throughout the research process.

No conflicts of interest or ethical concerns arise from the research.

References

[1] Ajzen, I. (1991). The Theory of Planned Behavior. Organizational Behaviour and Human
[2] Decisio Process, 50(50), 179–211.
[3] Hayat, K., & Qingyu, Z. (2024). The synergistic effects of green innovation strategies on sustainable innovative performance with the mediation of green innovative competitive advantage. Corporate Social Responsibility and Environmental Management.
[4] Alshukri, T., Seun Ojekemi, O., Öz, T., & Alzubi, A. (2024). The Interplay of Corporate Social Responsibility, Innovation Capability, Organizational Learning, and Sustainable Value Creation: Does Stakeholder Engagement Matter?. Sustainability, 16(13), 5511.
[5] Arundel, A. (2017). Rethinking the effect of risk aversion on the benefits of service innovations in public administration agencies. Research Policy, 46(5), 900-910.
[6] Aumeboonsuke, V., & Caplanova, A. (2021). An analysis of impact of personality traits and mindfulness on risk aversion of individual investors. Current Psychology, 1-18.
[7] Aytac, S., & Mizrachi, D. (2022). The mindfulness framework for implementing mindfulness into information literacy instruction. The Reference Librarian, 63(1-2), 43-61.
[8] Bloodgood, J. M., & Morrow Jr, J. L. (2003). Strategic organizational change: exploring the roles of environmental structure, internal conscious awareness and knowledge. Journal of management studies, 40(7), 1761-1782.
[9] Bond, M. A., & Haynes, M. C. (2014). Workplace diversity: A social–ecological framework and policy implications. Social Issues and Policy Review, 8(1), 167-201.
[10] Bonham, G. S., Basehart, S., Schalock, R. L., Marchand, C. B., Kirchner, N., & Rumenap, J. M. (2004). Consumer-based quality of life assessment: The Maryland Ask Me! Project. Mental Retardation, 42(5), 338–355. https://doi.org/10.1352/0047-6765(2004)42<338:CQOLAT>2.0.CO;2
[11] Caiado, R. G. G., de Freitas Dias, R., Mattos, L. V., Quelhas, O. L. G., & Leal Filho, W. (2017). Towards sustainable development through the perspective of eco-efficiency-A systematic literature review. Journal of Cleaner Production, 165, 890-904.
[12] Calik, E., & Bardudeen, F. (2016). A Measurement Scale to Evaluate Sustainable Innovation Performance in Manufacturing Organizations. Procedia CIRP, 40, 449–454. https://doi.org/10.1016/j.procir.2016.01.091
[13] Chanana, N., & Singh, M. Y. (2024). Green HRM: Boosting Employee Engagement with Digital Tools for Sustainability. Socio-Economic Relevance in Science, Social Science, and Commerce toward Sustainability.
[14] Chin, W. W., Chinn, W. W., & Chin, W. W. (1998). The partial least squares approach to structural equation modelling. In Marcoulides G. A. (Ed.). In Modern Methods for Business Research (Vol. 295, Issue 2).
[15] Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. Journal of Applied psychology, 86(3), 499.
[16] Eastburn, R. W., & Sharland, A. (2017). Risk management and managerial mindset. The journal of risk finance, 18(1), 21-47.
[17] Elsayed, A. M., Zhao, B., Goda, A. E. M., & Elsetouhi, A. M. (2023). The role of error risk taking and perceived organizational innovation climate in the relationship between perceived psychological safety and innovative work behavior: A moderated mediation model. Frontiers in Psychology, 14, 1042911.
[18] Emerson, R. W. (2015). Convenience sampling, random sampling, and snowball sampling: How does sampling affect the validity of research? Journal of Visual Impairment and Blindness, 109(2), 164–168. https://doi.org/10.1177/0145482x1510900215
[19] Epstein, M. J., & Roy, M. J. (2001). Sustainability in action: Identifying and measuring the key performance

drivers. Long range planning, 34(5), 585-604.
[20] Ewim, C. P. M., Achumie, G. O., Adeleke, A. G., Okeke, I. C., & Mokogwu, C. (2024). Developing a cross-functional team coordination framework: A model for optimizing business operations. International Journal of Frontline Research in Multidisciplinary Studies, 4(1).
[21] Falcone, P. M. (2023). Sustainable energy policies in developing countries: a review of challenges and opportunities. Energies, 16(18), 6682.
[22] Galpin, T., Whitttington, J. L., & Bell, G. (2015). Is your sustainability strategy sustainable? Creating a culture of sustainability. Corporate Governance, 15(1), 1-17.
[23] Ghosh, S., & Srivastava, B. K. (2014). Construction of a Reliable and Valid Scale for Measuring Organizational Culture. Global Business Review, 15(3), 583–596. https://doi.org/10.1177/0972150914535145
[24] Glomb, T. M., Duffy, M. K., Bono, J. E., & Yang, T. (2011). Mindfulness at work. In Research in personnel and human resources management (pp. 115-157). Emerald Group Publishing Limited.
[25] Good, D. J., Lyddy, C. J., Glomb, T. M., Bono, J. E., Brown, K. W., Duffy, M. K., ... & Lazar, S. W. (2016). Contemplating mindfulness at work: An integrative review. Journal of management, 42(1), 114-142.
[26] Guenther, P., Guenther, M., Ringle, C. M., Zaefarian, G., & Cartwright, S. (2023). Improving PLS-SEM use for business marketing research. Industrial Marketing Management, 111(October 2020), 127–142. https://doi.org/10.1016/j.indmarman.2023.03.010
[27] Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. European Business Review, 31(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203
[28] Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. Journal of the Academy of Marketing Science, 40(3), 414–433. https://doi.org/10.1007/s11747-011-0261-6
[29] Henseler, J. (2018). Partial least squares path modeling: Quo vadis? Quality and Quantity, 52(1), 1–8. https://doi.org/10.1007/s11135-018-0689-6
[30] Hernández, B., Jiménez, J., & Martín, M. J. (2011). Age, gender and income: Do they really moderate online shopping behaviour? Online Information Review, 35(1), 113–133. https://doi.org/10.1108/14684521111113614
[31] Hickman, E., Kharouf, H., & Sekhon, H. (2020). An omnichannel approach to retailing: demystifying and identifying the factors influencing an omnichannel experience. International Review of Retail, Distribution and Consumer Research, 30(3), 266–288. https://doi.org/10.1080/09593969.2019.1694562
[32] Hillson, D., & Murray-Webster, R. (2017). Understanding and managing risk attitude. Routledge.
[33] Hoon Song, J., Kolb, J. A., Hee Lee, U., & Kyoung Kim, H. (2012). Role of transformational leadership in effective organizational knowledge creation practices: Mediating effects of employees' work engagement. Human resource development quarterly, 23(1), 65-101.
[34] Jerab, D. (2023). How to Be an Effective Leader in Decision Making in an Unstable Environment. Available at SSRN 4525803.
[35] Johnston, M. A. (2015). The sum of all fears: Stakeholder responses to sponsorship alliance risk. Tourism Management Perspectives, 15, 91-104.
[36] Kabat-Zinn, J. (1994). Wherever you go, there you are: Mindfulness meditation in everyday life. Hyperion.
[37] Kabat-Zinn, J. (2003). Mindfulness-based stress reduction (MBSR). Constructivism in the human sciences, 8(2), 73.
[38] Kabat-Zinn, J. (2003a). Mindfulness-based interventions in context: Past, present, and future. In Clinical Psychology: Science and Practice (Vol. 10, Issue 2, pp. 144–156). https://doi.org/10.1093/clipsy/bpg016
[39] Kabat-Zinn, J. (2003b). Mindfulness-based interventions in context: Past, present, and future. Clinical Psychology: Science and Practice, 10(2), 144–156. https://doi.org/10.1093/clipsy/bpg016
[40] Kay, A. A., & Skarlicki, D. P. (2020). Cultivating a conflict-positive workplace: How mindfulness facilitates constructive conflict management. Organizational Behavior and Human Decision Processes, 159, 8-20.
[41] Kehoe, R. R., & Wright, P. M. (2013). The impact of high-performance human resource practices on employees' attitudes and behaviors. Journal of management, 39(2), 366-391.
[42] Khan, D. S. (2024). Organizational Behaviour insights: Examining dynamics of Workplace Culture and Employee Interaction in Modern Organizations. International Journal for Multidimensional Research Perspectives, 2(5), 37-53.
[43] Klettner, A., Clarke, T., & Boersma, M. (2014). The governance of corporate sustainability: Empirical insights

into the development, leadership and implementation of responsible business strategy. Journal of business ethics, 122, 145-165.

[44] Kremer, H., Villamor, I., & Aguinis, H. (2019). Innovation leadership: Best-practice recommendations for promoting employee creativity, voice, and knowledge sharing. Business horizons, 62(1), 65-74.

[45] Kumar, H., & Raghavendran, S. (2015). Gamification, the finer art: fostering creativity and employee engagement. Journal of Business Strategy, 36(6), 3-12.

[46] Lutfi, A., Alrawad, M., Alsyouf, A., Almaiah, M. A., Al-Khasawneh, A., Al-Khasawneh, A. L., Alshira'h, A. F., Alshirah, M. H., Saad, M., & Ibrahim, N. (2023). Drivers and impact of big data analytic adoption in the retail industry: A quantitative investigation applying structural equation modeling. Journal of Retailing and Consumer Services, 70(September 2022), 103129. https://doi.org/10.1016/j.jretconser.2022.103129

[47] Magno, F., & Cassia, F. (2024). Predicting restaurants' surplus food platform continuance: Insights from the combined use of PLS-SEM and NCA and predictive model comparisons. Journal of Retailing and Consumer Services, 79(March), 103820. https://doi.org/10.1016/j.jretconser.2024.103820

[48] Manfreda, K. L., & Vehovar, V. (2015). Internet Surveys. In International Handbook of Survey Methodology (Issue November). https://doi.org/10.4324/9780203843123.ch14

[49] Marian, A. L., Chiriac, L. E., Ciofu, V., & Apostol, M. M. (2024). Understanding Risky Behavior in Sustainable Driving among Young Adults: Exploring Social Norms, Emotional Regulation, Perceived Behavioral Control, and Mindfulness. Sustainability, 16(15), 6620.

[50] Nandan, S., & Jyoti. (2020). Organizational culture dimensions as drivers of employee engagement for business sustainability: towards a conceptual framework. Sustainable Human Resource Management: Transforming Organizations, Societies and Environment, 109-132.

[51] Neff, G. (2012). Venture labor: Work and the burden of risk in innovative industries. MIT press.

[52] Nguyen, M. V. (2024). Exploring the impacts of risk perception and risk management planning on innovation orientation: a PLS-SEM approach. Engineering, Construction and Architectural Management.

[53] Nishii, L. H., & Rich, R. E. (2013). Creating inclusive climates in diverse organizations. Diversity at work: The practice of inclusion, 330-363.

[54] Nuryanto, U. W., Quraysin, I., & Pratiwi, I. (2024). Harmonizing Eco-Control and Eco-Friendly Technologies with Green Investment: Pioneering Business Innovation for Corporate Sustainability in the Indonesian Context. Environmental Challenges, 100952.

[55] Overbey, J., & Gordon, P. (2017). Moving from power to empowerment in decision-making. Servant leadership and followership: Examining the impact on workplace behavior, 177-205.

[56] Peel, M. (2023). Climate Justice Collaborative Toolkit: A Community Co-Development Process for Addressing Climate and Racial Justice Needs (Doctoral dissertation, Arizona State University).

[57] Ramaswamy, V. (2009). Leading the transformation to co-creation of value. Strategy & Leadership, 37(2), 32-37.

[58] Ramus, C. A., & Steger, U. (2000). The roles of supervisory support behaviors and environmental policy in employee "Ecoinitiatives" at leading-edge European companies. Academy of Management journal, 43(4), 605-626.

[59] Rezapouraghdam, H., Alipour, H., & Arasli, H. (2019). Workplace spirituality and organization sustainability: a theoretical perspective on hospitality employees' sustainable behavior. Environment, Development and Sustainability, 21, 1583-1601.

[60] Rogers, E. M., Singhal, A., & Quinlan, M. M. (2014). Diffusion of innovations. In An integrated approach to communication theory and research (pp. 432-448). Routledge.

[61] Rosca, E., Arnold, M., & Bendul, J. C. (2017). Business models for sustainable innovation–an empirical analysis of frugal products and services. Journal of Cleaner Production, 162, S133-S145.

[62] Sajjad, A., & Shahbaz, W. (2020). Mindfulness and social sustainability: An integrative review. Social Indicators Research, 150(1), 73-94.

[63] Sarstedt, M., & Ringle, C. M. (2010). Treating unobserved heterogeneity in PLS path modeling: A comparison of FIMIX-PLS with different data analysis strategies. Journal of Applied Statistics, 37(8), 1299–1318. https://doi.org/10.1080/02664760903030213

[64] Shah, S. S., & Asghar, Z. (2024). Individual attitudes towards environmentally friendly choices: a comprehensive analysis of the role of legal rules, religion, and confidence in government. Journal of Environmental Studies and Sciences, 1-23.

[65] Sharari, H., Qawasmeh, R., Helalat, A., & Jahmani, A. (2024). Enhancing employee sustainability through employee quality of life: the role of top management support. The TQM Journal.
[66] Shields, P. M., & Rangarajan, N. (2013). A playbook for research methods: Integrating conceptual frameworks and project management. New Forums Press.
[67] Siqueira, R. P., & Pitassi, C. (2016). Sustainability-oriented innovations: Can mindfulness make a difference?. Journal of Cleaner Production, 139, 1181-1190.
[68] Smith, A. M., & O'Sullivan, T. (2012). Environmentally responsible behaviour in the workplace: An internal social marketing approach. Journal of Marketing Management, 28(3-4), 469-493.
[69] Stratton, K. J. (2006). Mindfulness-based approaches to impulsive behaviors. The New School Psychology Bulletin, 4(2), 49-71.
[70] Tanay, G., & Bernstein, A. (2013). State mindfulness scale (SMS): Development and initial validation. Psychological Assessment, 25(4), 1286–1299. https://doi.org/10.1037/a0034044
[71] Vivona, R., Demircioglu, M. A., & Audretsch, D. B. (2023). The costs of collaborative innovation. The Journal of Technology Transfer, 48(3), 873-899.
[72] Wamsler, C., Brossmann, J., Hendersson, H., Kristjansdottir, R., McDonald, C., & Scarampi, P. (2018). Mindfulness in sustainability science, practice, and teaching. Sustainability science, 13, 143-162.