

# EVALUATING CRITICAL FACTORS OF EMPLOYEE ENGAGEMENT USING THE BEST- WORTH METHOD: A CASE STUDY OF DOIWALA SUGAR MILL

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## **Abstract:**

Employee Engagement (EE) has become essential for improving productivity, reducing attrition, and sustaining competitiveness in industrial sectors. This study explores the critical determinants of engagement among employees at the Doiwala Sugar Mill (DSCL) in Uttarakhand. Drawing on WeThrive's 4C framework- Capability, Connection, Confidence, and Cognitive-fifteen factors were identified through literature review and expert consultation. To establish their relative importance, the Best-Worst Method (BWM), a multi-criteria decision-making technique, was applied to responses from fifteen participants, including industry professionals and academics. The analysis reveals that skills, knowledge, team, cooperation, attention, and availability of resources are the most influential factors in shaping engagement. These findings highlight the need for management to prioritize; this research offers practical guidance for enhancing engagement in agro-industrial organizations and contributes to the broader discourse on sustainable workforce management.

**Keywords:** Employee Engagement; Best-Worst Method (BWM); WeThrive's 4C Model; Critical factors; Sugar Industry; Doiwala Sugar Mill (DSCL).

## **Introduction:**

EE has become a central focus in organizational research due to its strong link with productivity, retention, and innovation. It is described as a positive, fulfilling, work-related state of vigor, dedication, and absorption (Schaufeli & Bakker, 2004). Khan (1990) defined EE as the harnessing of employee's physical, cognitive, and emotional selves to their work roles. This perspective has been widely adopted, with Gallup (2024) noting that engaged employees act as psychological owners, driving innovation and growth. Similarly, Quantum Workplace (2024) views engagement as the emotional and mental connection employees have toward their organization, team, and work.

In manufacturing and agro-industrial contexts, engagement assumes special significance due to challenging working conditions, seasonal operations, and reliance on manual labor (Gautam & Singh, 2017). Previous studies have highlighted the influence of leadership, communication, and job design in shaping engagement (Chandani et al., 2016; Moletsane et al., 2019). However, despite the importance of these factors, limited empirical research exists on how engagement is prioritized in sugar mills, especially in Uttarakhand.

To address this gap, the present study examines EE at the DSCL using WeThrive's 4C model (Bishop, 2017) and the BWM (Razaei, 2015; 2016). This integrated approach enables the identification and prioritization of critical factors influencing engagement, providing both theoretical contributions and practical insights for workforce management.

## Literature Review:

EE has been widely analyzed across organizational and industrial settings. Khan (1990) conceptualized it as the psychological presence of employees in work roles, while Schaufeli and Bakker (2004) expanded the definition to include vigor, dedication, and absorption. Bakker and Demerouti (2008) further emphasized that engaged employees show persistence, enthusiasm, and resilience, contributing to improved organizational performance. Leadership is consistently highlighted as a driver of EE. Transformational leadership, characterized by inspiration, intellectual stimulation, and individualized support, enhance commitment (Treetipbut & Praditbatuga, 2024). Chandani et al., (2016) also confirmed that supportive leadership strengthens trust and organizational culture, both of which enhance engagement. Similarly, communication and transparency significantly improve employee morale and willingness to contribute (Moletsane et al., 2019).

Work design and compensation are equally significant. Hackman and Oldham's (1976) job characteristics model suggests that autonomy, task significance, and feedback drive engagement by boosting intrinsic motivation (Bakker & Demerouti, 2008). Vazirani (2005) argued that recognition and rewards further strengthen employees' connection with organizational goals. The psychological contract also plays a crucial role in shaping EE. Ayyaz, Ullah, and Baloch (2021) demonstrated that contract breaches reduce trust and engagement, while fulfilling of mutual obligations strengthens organizational loyalty. Career growth opportunities, as noted by Kapoor (2012) and Sinha et al., (2021), are also critical in sustaining long-term commitment. In industrial contexts, Gautam and Sinha (2017) found that favorable work conditions in sugar mills enhanced retention and productivity. Job security has similarly been identified as a key factor, with Prasongthan (2022) demonstrated that employees who feel secure in their roles are more willing to invest emotionally and cognitively in their work, while Bhatti (2024) found that security buffers against disengagement in manufacturing industries. Robertson (2013) integrated engagement with psychological; well-being, stressing that sustainable performance requires balancing work demands with employee health. Gaikwad and Jadhav (2017) observed that sugarcane workers face socio-economic vulnerabilities that affect their ability to remain engaged. Nevertheless, interventions such as improved work conditions, training programs, and recognition systems have been shown to boost engagement and productivity in similar contexts (Moletsane et al., 2019; Singh et al., 2021).

Recent frameworks have expanded engagement research. Bishop (2017) introduced the WeThrive's 4C model, which identifies capability(C1), connection(C2), confidence(C3), and cognitive(C4) dimensions as central drivers. Meanwhile, Rezaei (2015; 2016) developed the BWM, a decision-making tool for prioritizing engagement factors with consistency and reliability. Recent applications have demonstrated its strength in areas such as supply chain resilience, sustainability, and organizational decision-making (Debnath et al., 2023; Chusi et al., 2025).

The Literature collectively indicates that engagement is influenced by leadership, communication, job design, career opportunities, and organizational support. However, limited evidence exists on how these factors operate within sugar mills, where seasonal employment and socio-economic dynamics present unique challenges.

**Summary of categories and subcategories:**

Main Category	Subcategory	Code	Short Description
Capabilities(C1)	Knowledge	C1A	Employees’ knowledge base
	Skills	C1B	Technical & soft skills
	Resources	C1C	Tools & resources available
	Competence	C1D	Ability to perform tasks effectively
Connection(C2)	Attention	C2A	Focus on work environment
	Common Bond	C2B	Shared sense of belonging
	Status	C2C	Social/ professional standing
Confidence(C3)	Security	C3A	Job stability & safety
	Control	C3B	Influence over tasks/ outcomes
	Headspace	C3C	Mental & emotional state
	Free from worry	C4D	Lack of anxiety/ insecurity
Cognitive(C4)	Company & Customers	C4A	Perception of firm-customer relationship
	Personal Performance	C4B	Self-effectiveness & output
	Team Understanding	C4C	Awareness of team roles/ goals
	Team Cooperation	C4D	Collaborative teamwork

**Objectives of the Study:**

The study was undertaken with the following objectives:

- To identify the critical factors influencing EE among current employees at DSCL.
- To classify these factors into four dimensions of WeThrive’s model: Capability, Connection, Confidence, and Cognitive.
- To prioritize the identified factors by applying the BWM and determine their relative significance.

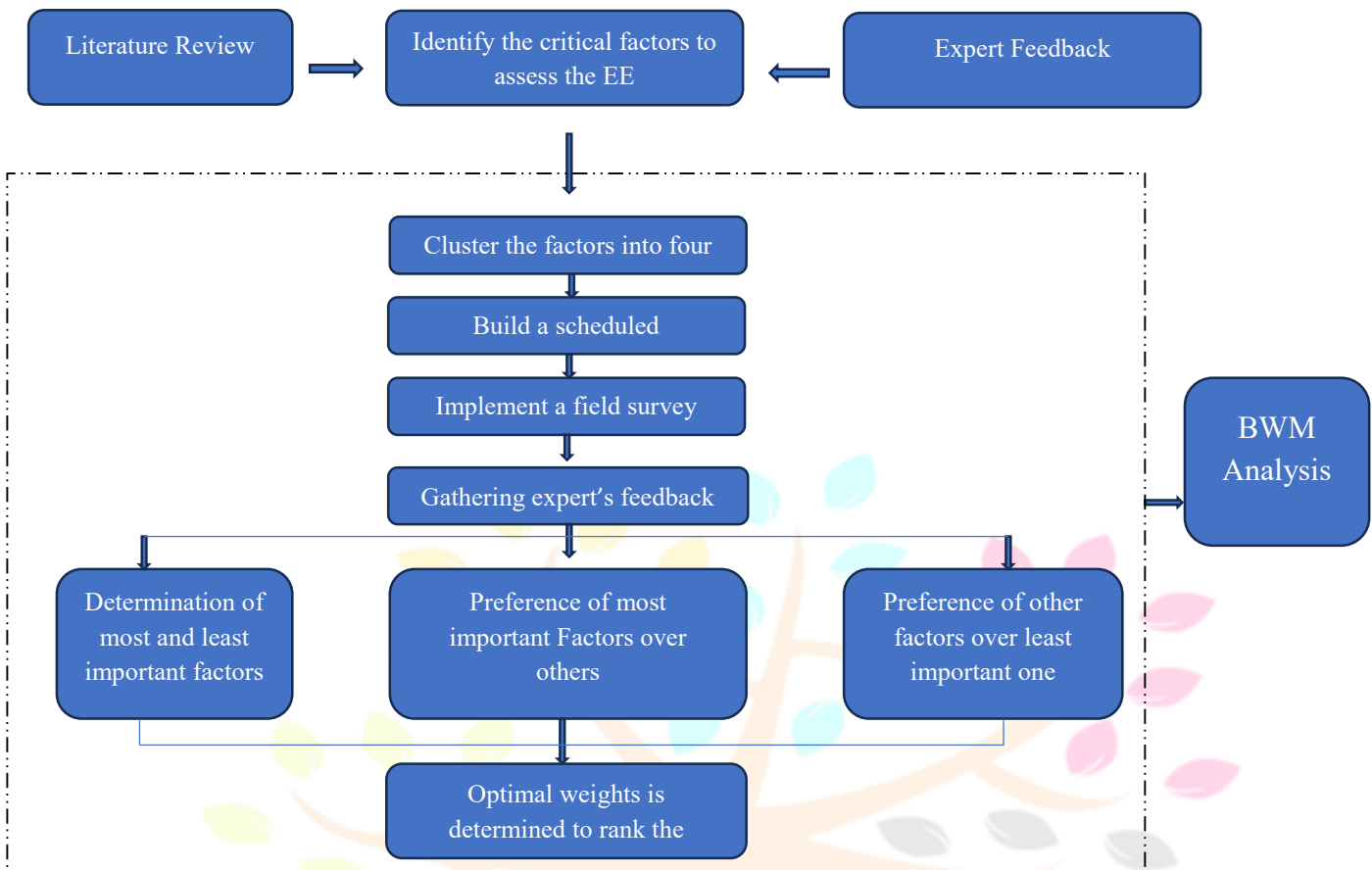
**Research Methodology:**

This study employed an empirical approach supported by multi-criteria decision-making techniques. A detailed literature review was first conducted to identify potential factors of EE. After expert consultation, fifteen factors were finalized and grouped into the four dimensions of WeThrive’s 4C model. Primary data were collected from fifteen respondents, including industry experts, professors, and research scholars, using a structured questionnaire. Respondents were asked to identify the most and least important criteria and evaluate the relative significance of each factor, in accordance with the BWM ( Rezaei, 2015; 2016).

The methodology involved the following sequential steps:

- Identification of factors influencing EE through literature and expert input.
- Classification of factors into four dimensions of WeThrive’s 4C model.
- Selection of the most and least important criteria by respondents.
- Pairwise comparison of best-to-others and others-to-worst using a 1-9 scale.
- Calculation of optimal weights and consistency ratios using the BWM linear model.

The research framework adopted for this study is illustrated bellow:



**Figure 1: Research Design**

## Research Hypotheses:

Based on the objectives and review of literature, the study proposes the following hypotheses:

- **H1:** Employees' capabilities, especially their skills and knowledge, are the most critical determinants of EE at DSCL.
- **H2:** Employees' connection factors, such as attention and common bond, significantly enhance their engagement levels.
- **H3:** Confidence and cognitive factors (e.g., security, team cooperation) contribute positively to engagement, but their influence is comparatively weaker than capabilities and connection.

## Data Analysis:

The data gathered from experts was systematically examined using the BWM. This method was chosen for its ability to handle multi-criteria decision-making problems with fewer comparisons while ensuring consistent and reliable results. The analysis was carried out in three major steps: deriving weights, validating consistency, and ranking the factors.

## Step 1: Derivation of Average Weights

The initial stage involved compiling the evaluation of fifteen experts, who identified the most and least influential factors within the four dimensions of WeThrive's 4C model. These responses were then converted into quantitative values for analysis. To maintain clarity in the main text, the detailed dataset of respondent inputs is provided in

**Appendix A.** The average weights calculated from these responses represents the collective perception of the importance of each factor.

**Table 1: Average Weights of Each Criteria**

Criteria	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	Avg. weight
C1	0.095	0.551	0.626	0.563	0.519	0.305	0.528	0.514	0.29	0.519	0.649	0.307	0.464	0.235	0.529	0.4463
C2	0.095	0.118	0.152	0.216	0.063	0.529	0.063	0.286	0.061	0.299	0.065	0.528	0.393	0.588	0.294	0.2498
C3	0.333	0.074	0.071	0.06	0.119	0.102	0.102	0.143	0.504	0.119	0.13	0.063	0.089	0.059	0.059	0.1351
C4	0.476	0.257	0.152	0.162	0.299	0.064	0.307	0.057	0.145	0.063	0.156	0.102	0.054	0.118	0.118	0.1685
C1A	0.097	0.297	0.226	0.053	0.392	0.225	0.404	0.297	0.182	0.588	0.308	0.529	0.229	0.384	0.529	0.3160
C1B	0.612	0.521	0.572	0.519	0.462	0.546	0.454	0.521	0.273	0.235	0.533	0.294	0.171	0.478	0.294	0.4322
C1C	0.174	0.119	0.136	0.305	0.092	0.06	0.092	0.064	0.485	0.059	0.056	0.118	0.549	0.08	0.118	0.1669
C1D	0.118	0.064	0.066	0.122	0.054	0.169	0.05	0.119	0.061	0.118	0.103	0.059	0.051	0.058	0.059	0.0846
C2A	0.321	0.143	0.091	0.718	0.267	0.255	0.75	0.339	0.671	0.091	0.718	0.197	0.712	0.267	0.718	0.4171
C2B	0.607	0.762	0.197	0.205	0.667	0.655	0.167	0.589	0.257	0.148	0.205	0.712	0.197	0.667	0.205	0.4159
C2C	0.071	0.095	0.712	0.077	0.067	0.091	0.083	0.071	0.071	0.761	0.077	0.091	0.091	0.067	0.077	0.1668
C3A	0.593	0.51	0.54	0.286	0.411	0.197	0.521	0.391	0.647	0.29	0.305	0.158	0.294	0.526	0.504	0.4114
C3B	0.105	0.315	0.232	0.514	0.46	0.131	0.297	0.452	0.077	0.061	0.519	0.211	0.529	0.316	0.29	0.3006
C3C	0.056	0.126	0.055	0.143	0.08	0.61	0.119	0.096	0.125	0.145	0.053	0.561	0.118	0.105	0.061	0.1635
C3D	0.246	0.049	0.174	0.057	0.049	0.062	0.064	0.061	0.151	0.504	0.122	0.07	0.059	0.053	0.145	0.1243
C4A	0.588	0.51	0.572	0.519	0.529	0.529	0.412	0.519	0.512	0.457	0.182	0.309	0.415	0.233	0.569	0.4570
C4B	0.118	0.315	0.226	0.305	0.305	0.305	0.458	0.305	0.307	0.407	0.273	0.51	0.415	0.565	0.236	0.3366
C4C	0.235	0.126	0.066	0.053	0.064	0.064	0.085	0.053	0.058	0.049	0.485	0.058	0.049	0.14	0.054	0.1093
C4D	0.059	0.049	0.136	0.122	0.102	0.102	0.045	0.122	0.123	0.086	0.061	0.123	0.122	0.061	0.142	0.0969

**Step 2: Consistency Validation**

To ensure the reliability of the results, a consistency index was applied. The calculated values indicated that the majority of responses were highly consistent, confirming that the comparisons made by experts were logical and dependable.

**Table 2: Consistency Values of Each Criteria**

Criteria	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	Avg. Consistency
C1 C2 C3 C4	0.17	0.04	0.21	0.14	0.19	0.1	0.18	0.04	0.07	0.19	0.21	0.13	0.13	0.18	0.08	<b>0.1381</b>
C1A C1B C1C C1D	0.25	0.13	0.19	0.15	0.19	0.2	0.08	0.19	0.03	0.21	0.18	0.13	0.21	0.18	0.13	<b>0.1632</b>
C2A C2B C2C	0.04	0.04	0.07	0.1	0.13	0.1	0.13	0.07	0.08	0.13	0.1	0.07	0.07	0.13	0.1	<b>0.0905</b>
C3A C3B C3C C3D	0.23	0.22	0.21	0.07	0.18	0.2	0.08	0.19	0.18	0.07	0.21	0.04	0.08	0.21	0.12	<b>0.1541</b>

C4A	0.2	0.2	0.1	0.1	0.0	0.	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	
C4B	1	2	9	5	7	1	1	1	3	8	2	1	4	8	3	
C4C																
C4D																<b>0.1718</b>

### Step-3: Global Ranking of Factors

After validation, the criteria weights were aggregated to produced global rankings. This stage provided a clear hierarchy of the factors influencing EE. The findings revealed that C1B and C1A are the most influential drivers of engagement, while factors such as C4D and C2B also emerged as strong contributors. In contrast, C2C and C3C were identified as relatively less impactful.

**Table 3: Global Weights and Ranks**

Main Category	Main Criteria Weight	Consistency Value of Main Criteria	Main Criteria Ranking	Critical Factor	Fator Weights	Consistency Value of Factor	Factor Ranking	Factor Global Weights	Factor Global Ranking
C1	0.446	0.138	1	C1A	0.316	0.163	2	0.14	2
				C1B	0.432		1	0.19	1
				C1C	0.167		3	0.07	6
				C1D	0.085		4	0.04	11
C2	0.25		4	C2A	0.417	0.09	1	0.1	3
				C2B	0.416		2	0.1	4
				C2C	0.167		3	0.04	9
C3	0.135		3	C3A	0.411	0.154	1	0.06	8
				C3B	0.301		2	0.04	10
				C3C	0.164		3	0.02	12
				C3D	0.124		4	0.02	14
C4	0.169		2	C4A	0.457	0.172	1	0.08	5
				C4B	0.337		2	0.06	7
				C4C	0.109		3	0.02	13
				C4D	0.097		4	0.02	15

### Findings and Conclusion:

The study produced several key findings:

- Capabilities are the most critical engagement drivers, particularly skills and knowledge (Zhu et al., 2022; Chanana & Pass, 2020).
- Connection factors such as attention and common bond are vital for fostering recognition and belonging (Kapoor, 2012; Sinha et al., 2021).
- Confidence elements like job security play a moderate role, consistent with findings from seasonal industries (Prasongthan, 2022; Bhatti, 2024).
- Cognitive Factors including teamwork and organizational alignment contribute meaningfully but are less dominant (Huang et al., 2022; Reed et al., 2025)
- Status and headspace ranked lowest, suggesting limited relevance in this industrial context (Tian et al., 2021).

In conclusion, EE in sugar mill is shaped primarily by workforce competence and meaningful connections. Confidence and cognitive factors provide supportive roles but are not central. The findings confirm that

engagement is multidimensional (Khan, 1990; Schaufeli & Bakker, 2004), with varying weights depending on context.

This research contributes by extending the 4C model into agro-industrial settings, demonstrating the utility of BWM, and offering practical recommendations for managers. Enhancing skills, investing in training, and fostering supportive relationships are essential for sustaining engagement. Beyond organizational outcomes, these insights align with Sustainable Development Goals on decent work, reduced inequalities, and sustainable growth.

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### Appendix A. Respondent Data Table

Respondent ID	Best Criterion	Worst Criterion	Consistency Ratio	Background/Notes
R1	Skills	Status	0.06	Mill Manager,10+ yrs. exp.
R2	Knowledge	Headspace	0.04	Academic, HR Expert
R3	Attention	Status	0.08	Industrial Researcher
R4	Knowledge	Headspace	0.07	Senior HR Manager
R5	Skills	Status	0.05	Operations Supervisor
R6	Skills	Headspace	0.06	Academic, Org. Behavior
R7	Knowledge	Status	0.04	Research Scholar
R8	Skills	Headspace	0.07	Technical Expert
R9	Attention	Status	0.05	Production Head
R10	Knowledge	Headspace	0.08	HR Consultant
R11	Skills	Status	0.06	Industrial Engineer

R12	Knowledge	Headspace	0.04	Research Faculty
R13	Skills	Status	0.05	Senior Mill Supervisor
R14	Knowledge	Headspace	0.07	Academic, Mgmt. Studies
R15	Attention	Status	0.06	Research Associate

