RESEARCH PAPER

Understanding Engagement Through Segments: Differences in Engagement and Job Satisfaction Across Employee Segments in Gujarat's Manufacturing Sector

Ms. Nishat Sayed[1], Dr. Chirag Rasikbhai Patel[2]

[1]Research Scholar, Sankalchand Patel University, Visnagar, Gujarat, sayednishat02@gmail.com

[2]Associate Professor, Affiliation: Department of Business Management, Sankalchand Patel College of Engineering, Faculty of Management Studies, Sankalchand Patel University, Visnagar, Gujarat, India. 384315.

crpspce@gmail.com, ORCID ID: 0000-0003-4788-0749

ABSTRACT

This study classified employees into distinct segments based on perceptions of employee engagement drivers. The extended study also studied whether these segmented groups differed in employee engagement and job satisfaction. Using a descriptive single cross-sectional research design, data were collected online from 280 employees. For segmentation, engagement drivers were used. Hierarchical clustering method was adopted for cluster selection and it was then followed by K-means clustering for final results. Three clusters emerged from the analysis and they were represented by low, moderate and high driver-perception profiles. One-way ANOVA results showed significant differences across clusters for both employee engagement and job satisfaction. It was found that high driver-perception cluster reported the highest levels of engagement and satisfaction. Low driver-perception cluster reported the lowest levels of engagement and satisfaction. Findings of the study meant that a person-centred segmentation approach provides a useful inputs to understand heterogeneity or homogeneity in perceptions and its association with employee engagement and job satisfaction within manufacturing organisations in Gujarat.

Keywords: Employee Engagement, Job Satisfaction, Engagement Drivers, Segmentation

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1. Introduction

Organisations are paying renewed attention to employee engagement and job satisfaction because both are closely connected with productivity, service quality, employee retention and organisational performance (Harter et al., 2002; Locke, 1976; Saks, 2006). Global context highlights that improving employees' day-to-day work experience is not only a "nice to have" but an acute requirement for workforce stability and performance (Gallup, 2025). Gallup's 2024 report mentioned that 52% of employees in India said "they were watching for or actively seeking a new job" (Gallup, Inc., 2024). Such patterns suggest that organisations need sharper, more targeted ways to understand which workplace conditions differentiate employees who feel engaged and satisfied.

Job satisfaction refers to employees' overall evaluation of their job experience which is shaped by both emotional responses and judgments about job and its expectations (Locke, 1976; Spector, 1997). Employee engagement is commonly described as a positive and active work-related state in which employees invest energy, involvement and dedication in their work roles (Saks, 2006; Schaufeli & Bakker, 2004). In India's labour market, concerns around job quality and employment conditions remain central policy issues, especially for younger workers and those in more vulnerable forms of employment (International Labour Organization [ILO] & Institute for Human Development [IHD], 2024).

Engagement research also shows that organisational practices and perceived support are important antecedents of engagement and satisfaction (Robinson et al., 2004; Saks, 2006). In the engagement-drivers literature, common drivers include leadership, communication, cooperation, organisational support, work environment, equal opportunities, training and development, work itself, rewards, performance appraisal and work–life balance (Bedarkar & Pandita, 2014; Robinson et al., 2004).

2. Literature Review

Employees do not experience workplace practices in the same way. Even in the same organisation, some employees may feel strongly supported, well-informed and fairly treated while others may feel the opposite. These differences matter because perceptions about the workplace often shape two important outcomes namely employee engagement and job satisfaction.

2.1 Employee engagement and engagement drivers

Robinson, Perryman and Hayday (2004) examined workplace drivers and engagement attitudes among employees in UK and highlighted that engagement is shaped by management practices and the work environment, showing that engagement is not only an individual trait but also influenced by organisational

conditions. In Canada, Saks (2006) studied employees across workplaces and tested perceived organisational support, procedural justice and rewards as antecedents of job and organisational engagement and outcomes including job satisfaction, supporting the view that engagement and satisfaction are strongly connected to how employees interpret workplace support and fairness.

Broader literature review from India also summarised common drivers of engagement. Bedarkar and Pandita (2014), writing in an Indian context (Pune; cross-industry focus), reviewed engagement drivers such as leadership, communication and work–life balance and explained that these drivers are practical levers through which organisations can influence employees' positive work attitudes. Similarly, a review in the Indian Journal of Science and Technology by Chandani, Mehta, Mall and Khokhar (2016) (India; variables: engagement and its influencing factors; target audience: organisational employees; sector: cross-industry review) organised engagement factors at organisational and individual levels and reinforced that engagement is created through multiple drivers rather than a single practice. These reviews support the idea that employees' perceptions of multiple drivers should be considered together when studying engagement-related outcomes.

Job satisfaction is an overall evaluation of one's job and includes both emotional reactions and judgments about job conditions. In Jubail Industrial City, Saudi Arabia, Bin Shmailan (2016) examined job satisfaction, job performance and employee engagement among employees in an industrial/organisational setting, and discussed that satisfaction is influenced by work-related factors such as communication, appreciation and clarity of objectives. This supports the practical idea that satisfaction is shaped by how employees experience daily work conditions and organisational practices.

Several studies show that engagement and satisfaction are closely related across different countries and sectors. In Slovenia, Vorina, Simonič and Vlasova (2017) examined employee engagement and job satisfaction among employees across public and non-public sectors, and reported that higher engagement was associated with higher job satisfaction. In Morocco, Abderrahim and İyigün (2023) studied employee engagement and job satisfaction among employees in Moroccan companies across sectors, and also reported positive relationships between these variables, while noting that research sometimes debates the direction of this relationship. Importantly, the repeated evidence across contexts suggests that if employees can be grouped based on workplace perceptions, those groups are likely to show meaningful differences in engagement and satisfaction.

2.2 Engagement drivers and job satisfaction

In Delhi–NCR, India, Popli and Rizvi (2016) examined leadership style and employee engagement among frontline employees in service organisations and this showed that leadership is an important workplace driver for engagement. Bin Shmailan (2016) discussed communication as a satisfaction-related workplace factor among employees in an industrial city context. Communication is also commonly included in engagement driver frameworks, suggesting that employees may form different perception patterns based on how clear and respectful organisational communication feels. Chaudhry, Jariko, Mushtaque, Mahesar and Ghani (2017) tested a model including working environment, training and development, employee engagement, job satisfaction and organisational performance among employees in organisational settings, supporting that work environment and development practices are important workplace inputs connected with satisfaction and engagement outcomes. In the Philippines (Manila), Ang and Rabo (2018) studied employees in a company setting and examined employee engagement and job satisfaction dimensions (including work environment, compensation/benefits, career development and relationship with management).

Saks (2006) highlighted the importance of organisational support and fairness-related conditions when explaining engagement and job satisfaction outcomes among employees. Relatedly, in the United States, Khodakarami and Dirani (2020) examined drivers of employee engagement across working adults at national level and explored differences by work area and gender. Anwar and Qadir (2017) examined work engagement elements and job satisfaction among employees in private companies, and reported that challenge-related aspects of work were strongly linked with job satisfaction. Ang and Rabo (2018) included compensation and benefits as a dimension of job satisfaction linked with engagement. Garg, Dar and Mishra (2017) studied job satisfaction (intrinsic/extrinsic) and work engagement among bank managers, highlighting that reward-related satisfaction matters for positive work attitudes.

2.3 Clustering employees based on perception towards engagement drivers

Nimon, Shuck and Zigarmi (2015) examined employee engagement and job satisfaction as constructs (context: scholarly measurement research; variables: construct overlap and semantic equivalence; target audience: working adults/HR scholars; sector: general workforce) and discussed overlap between engagement and satisfaction measures. This strengthens the need for a person-centred approach that profiles employees based on drivers, then tests outcomes like engagement and job satisfaction across groups rather than assuming one average pattern.

3. Research gap

Across studies, there is strong evidence that engagement drivers such as leadership, work environment, organisational support, development and rewards are linked with engagement and job satisfaction (Ang & Rabo, 2018; Bin Shmailan, 2016; Chaudhry et al., 2017; Saks, 2006). But two clear gaps remain. One is that much of the literature is variable-centred and focuses on relationships between drivers and outcomes rather than identifying distinct employee groups based on patterns of driver perceptions. Second is that evidence is scattered across different

countries and sectors. Thus, it creates a need for context-specific evidence that can support practical decisions in Indian manufacturing organisational settings. Therefore, the present study extends earlier work by using a cluster approach to classify employees into distinct groups based on perceptions of engagement drivers. After identifying clusters, the study examines whether these clusters differ significantly in employee engagement and job satisfaction.

4. Research Objectives

The study focused on following two research objectives.

1. To classify employees into distinct groups based on perceptions of engagement drivers.
2. To test whether clusters differ significantly in employee engagement and job satisfaction.

5. Research Methodology

The study adopted a descriptive single cross-sectional research design. Study population comprised employees working in manufacturing sector of Gujarat, India. Data were collected using a structured questionnaire administered online. All construct items were measured using a five-point Likert scale. This supported consistent measurement of workplace perceptions and employee outcomes in a survey setting (Field, 2018). Convenience sampling was used due to practical access to respondents and the final usable dataset for reliability and descriptive analysis included 280 employees (Hair et al., 2019).

In cluster analysis, engagement-driver variables were standardized into z-scores to ensure equal contribution to distance calculations. 11 outlier cases were excluded to reduce distortion in distance-based clustering (Hair et al., 2019; Tabachnick & Fidell, 2019) and this resulted in a final clustering sample of 269. A two-stage clustering procedure was applied: Ward's hierarchical clustering using squared Euclidean distance to guide the appropriate cluster solution followed by K-means clustering (k = 3) to finalize cluster membership and centres (Hair et al., 2019). Differences across clusters in employee engagement and job satisfaction were then examined using one-way ANOVA (Field, 2018).

6. Data Analysis

6.1 Reliability

Table 1 Reliability

Construct	Items	Cronbach's α
Leadership	10	0.959
Communication	4	0.902
Cooperation	3	0.882
Organisational Support	6	0.772
Work Environment	7	0.954
Equal Opportunity	4	0.883
Training and Development	8	0.961
Work Itself	6	0.901
Reward and Recognition	9	0.948
Performance Appraisal	4	0.912
Work Life Balance	5	0.944
Employee Engagement	6	0.641
Job Satisfaction	5	0.947

Table 1 reports internal consistency reliability for the study constructs. The engagement-driver scales showed strong reliability, with Cronbach's alpha ranging from .772 (Organisational Support) to .961 (Training and Development). Leadership (α = .959), Work Environment (α = .954), Reward and Recognition (α = .948), Work Life Balance (α = .944), Performance Appraisal (α = .912), Communication (α = .902), Cooperation (α = .882) and Equal Opportunity (α = .883) also demonstrated good internal consistency. Job Satisfaction showed excellent reliability (α = .947). Employee Engagement reported comparatively lower reliability (α = .641), indicating weaker internal consistency relative to other constructs in this sample. Overall, most scales met the commonly used acceptability threshold for Cronbach's alpha. (Field, 2018; Nunnally & Bernstein, 1994)

Table 2 Descriptive Statistics and Normality

Construct	M	SD	Skewness	Kurtosis
Leadership	4.0061	0.83726	-1.249	1.914
Communication	3.8455	0.91264	-0.992	1.089
Cooperation	3.9274	0.82949	-0.972	1.357
Organisational Support	3.6917	0.69114	-0.796	1.298
Work Environment	3.9689	0.86173	-1.149	1.716
Equal Opportunity	3.8911	0.83479	-0.982	1.542
Training and Development	3.8223	0.96901	-0.945	0.705
Work Itself	3.9952	0.73769	-0.975	2.096
Reward and Recognition	3.6528	0.89782	-0.464	-0.077
Performance Appraisal	3.8232	0.88875	-0.795	0.829
Work Life Balance	4.0129	0.81393	-1.043	1.467
Employee Engagement	3.7292	0.57177	-0.757	1.696
Job Satisfaction	3.8721	0.86812	-0.832	0.998

Table 2 presents the mean, standard deviation, skewness and kurtosis for all study constructs (N = 280). Mean scores indicated generally favourable perceptions across engagement drivers, with the highest mean observed for Work Life Balance (M = 4.0129, SD = 0.81393) and Leadership (M = 4.0061, SD = 0.83726), followed by Work Itself (M = 3.9952, SD = 0.73769) and Work Environment

(M = 3.9689, SD = 0.86173). Among outcomes, Job Satisfaction (M = 3.8721, SD = 0.86812) and Employee Engagement (M = 3.7292, SD = 0.57177) were above the scale midpoint, showing moderately high levels in the sample.

Skewness values were negative for all constructs (range = −1.249 to −0.464), indicating that responses were clustered toward higher agreement levels. Kurtosis values ranged from −0.077 (Reward and Recognition) to 2.096 (Work Itself), showing acceptable peakedness for most constructs. Overall, skewness and kurtosis values remained within commonly used guidelines for approximate univariate normality in applied research, supporting suitability of parametric analyses. (Field, 2018; Hair et al., 2019)

6.2 Cluster Analysis

To segment employees based on how they perceived key employee engagement drivers, a two-stage clustering procedure was followed. First, the engagement-driver variables (Leadership, Communication, Cooperation, Organisational Support, Equal Opportunity, Training and Development, Work Itself, Reward and Recognition, Performance Appraisal, and Work Life Balance) were standardised into z-scores so that each variable contributed equally to the distance calculations and no single driver dominated the clustering due to scale variation (Field, 2018; Hair et al., 2019). Prior to clustering, 11 outlier cases were removed to reduce the possibility that extreme observations would form unstable clusters or distort cluster centers, which is a known concern in distance-based clustering (Hair et al., 2019; Tabachnick & Fidell, 2019). After outlier removal, the final clustering sample was N = 269.

Second, hierarchical cluster analysis using Ward's linkage and squared Euclidean distance was conducted. Ward's method is widely used in behavioural and management research because it tends to produce compact and well-separated clusters by minimizing within-cluster variance at each merging step (Hair et al., 2019). Squared Euclidean distance is appropriate for continuous standardized variables and is commonly paired with Ward's method (Field, 2018). The agglomeration schedule was examined to identify large increases in fusion coefficients in the later stages, which indicate that dissimilar clusters are being forced together and therefore support choosing a smaller number of clusters prior to that jump (Hair et al., 2019).

Third, the final number of clusters was refined using K-means clustering. K-means was selected because it provides stable final cluster membership and interpretable cluster centers for each driver once the number of clusters has been decided (Hair et al., 2019). The K-means solution was run for k = 3 and the algorithm was allowed to iterate until convergence was achieved. Cluster centers and distances between cluster centers were used to assess separation and interpretability of the cluster profiles.

Finally, to address the second objective of the paper, clusters were compared on Employee Engagement and Job Satisfaction. Since there were three clusters, one-way ANOVA was used to test whether mean engagement and job satisfaction differed across clusters (Field, 2018). Because Levene's tests indicated unequal variances, post hoc decisions were interpreted carefully and effect sizes (η^2 and ω^2) were reported to indicate the magnitude of differences across clusters (Field, 2018). Tukey HSD outputs were used from the provided output for pairwise comparisons and homogeneous subsets were used to show the order of cluster means.

All 269 cases were valid (100%) and there were no missing cases, indicating that hierarchical clustering was performed on the full cleaned dataset after outlier removal. Ward linkage with squared Euclidean distance was used as the clustering approach.

6.3 Agglomeration Schedule (Final Stages)

Table 3 Agglomeration Schedule (Final Stages)

Stage	Cluster 1	Cluster 2	Coefficient
260	5	13	755.725
261	7	8	780.652
262	1	6	806.261
263	2	24	838.287
264	7	10	874.145
265	1	2	928.151
266	4	7	1045.574
267	1	5	1340.784
268	1	4	2243.913

The fusion coefficients increased gradually across stages and then showed a notable increase at the final merge (Stage 268 coefficient = 2243.913), suggesting that very dissimilar clusters were combined at the end. This pattern supports selecting a small number of clusters before the last large merge, which is consistent with the logic of using the agglomeration schedule to decide the cluster solution (Hair et al., 2019). Based on interpretability and subsequent K-means results, a three-cluster solution was retained (Table 3).

6.4 Initial Cluster Centers (K-means, k = 3)

Table 4 Initial Cluster Centers (K-means, k = 3)

Clustering variable (z-score)	Cluster 1	Cluster 2	Cluster 3
Leadership	-1.67937	1.18712	-0.24613
Communication	0.16925	1.26497	-2.29613
Cooperation	0.08755	1.2931	-0.71616
Organisational Support	-0.03617	1.89302	-1.48307
Equal Opportunity	-1.3669	1.32839	-0.16899
Training and Development	-2.13861	1.21535	-2.6546
Work Itself	0.00646	1.36204	-1.801

Reward and Recognition	0.01547	1.50055	-2.3359
Performance Appraisal	0.19892	1.3241	-3.17662
Work Life Balance	-3.45588	1.21281	0.47564

The initial centers represent the starting seeds used by the K-means algorithm and are not interpreted as the final cluster solution (Table 4). The initial values show that starting points were well separated, which helps K-means search for stable cluster centers (Hair et al., 2019).

Table 5 Iteration History (Change in Cluster Centers)

Iteration	Change in centers (C1)	Change in centers (C2)	Change in centers (C3)
1	3.579	2.693	3.513
2	0.272	0.085	0.325
3	0.481	0.061	0.697
4	0.336	0.123	0.477
5	0.306	0.324	0.169
6	0.182	0.229	0.086
7	0.136	0.134	0.154
8	0.115	0.131	0.110
9	0.101	0.079	0.160
10	0.057	0.026	0.100
11	0.052	0.041	0.073
12	0.073	0.028	0.123
13	0.055	0.037	0.066
14	0.012	0.000	0.023
15	0.032	0.026	0.043
16	0.000	0.000	0.000

K-means clustering reached convergence at iteration 16, with the maximum absolute coordinate change equal to 0.000, indicating that cluster centers stabilised and the solution was final (Table 5). Convergence supports stability of the three-cluster solution (Field, 2018).

Table 6 Final Cluster Centers (K-means, k = 3)

Clustering variable (z-score)	Cluster 1	Cluster 2	Cluster 3
Leadership	0.11704	0.81388	-0.84512
Communication	0.09353	0.89859	-0.85592
Cooperation	0.04507	0.82595	-0.77096
Organisational Support	0.1442	0.81689	-0.85096
Equal Opportunity	0.09396	0.94656	-0.89499
Training and Development	0.12044	0.93478	-0.99912
Work Itself	0.02482	1.02315	-0.91096
Reward and Recognition	-0.00264	0.9916	-0.8827
Performance Appraisal	-0.01148	0.97248	-0.79414
Work Life Balance	-0.00381	0.84115	-0.7269

Final cluster centers are presented as z-scores (mean = 0, SD = 1). The pattern indicates three distinct profiles (Table 6):

Cluster 2 (High driver perceptions): All drivers were strongly positive (e.g., Leadership = 0.814, Communication = 0.899, Training and Development = 0.935, Work Itself = 1.023, Reward and Recognition = 0.992), reflecting above-average perceptions across engagement drivers.

Cluster 3 (Low driver perceptions): All drivers were negative (e.g., Leadership = −0.845, Communication = −0.856, Training and Development = −0.999, Work Itself = −0.911), reflecting below-average perceptions across drivers.

Cluster 1 (Moderate/average perceptions): Centers were near zero across drivers (e.g., Leadership = 0.117, Communication = 0.094, Reward and Recognition = −0.003, Work Life Balance = −0.004), reflecting approximately average perceptions.

Overall, the solution formed a meaningful low–moderate–high segmentation on engagement-driver perceptions.

Table 7 Distances Between Final Cluster Centers

Cluster A	Cluster B	Distance
1	2	2.693
1	3	2.916
2	3	5.579

Distances indicated that the strongest separation was between Cluster 2 and Cluster 3 (distance = 5.579), showing that the high- and low-perception groups were most distinct. Cluster 1 was closer to both Cluster 2 (2.693) and Cluster 3 (2.916), supporting its interpretation as a moderate group positioned between high and low clusters (Table 7).

Table 8 K-means ANOVA (Driver Variables)

Variable (z-score)	Cluster MS	df 1	Error MS	df 2	F	p
Leadership	49.862	2	0.413	266	120.676	<.001
Communication	55.667	2	0.314	266	177.28	<.001
Cooperation	46.228	2	0.468	266	98.855	<.001
Organisational Support	50.52	2	0.356	266	142.068	<.001

Equal Opportunity	61.336	2	0.246	266	249.459	<.001
Training and Development	67.746	2	0.282	266	240.041	<.001
Work Itself	68.155	2	0.227	266	299.727	<.001
Reward and Recognition	64.244	2	0.356	266	180.371	<.001
Performance Appraisal	57.58	2	0.345	266	167.066	<.001
Work Life Balance	45.079	2	0.478	266	94.302	<.001

All driver variables differed across clusters (all $p < .001$), indicating that the cluster solution achieved strong separation across the drivers used in clustering (Table 8). These F-values are interpreted descriptively, consistent with SPSS guidance that significance tests in this table are inflated because clusters were created to maximise differences (Field, 2018).

Table 9 Cluster Sizes (k = 3)

Cluster	N	%
1	123	45.73
2	80	29.74
3	66	24.53

The three clusters were adequately sized: Cluster 1 = 123 (45.7%), Cluster 2 = 80 (29.7%), and Cluster 3 = 66 (24.5%). Each cluster had sufficient membership for meaningful comparison of outcomes (Table 9).

Cluster 1 (n = 123; 45.7%)

Moderate Driver Perceptions

Profile: Ratings on engagement drivers were close to the overall sample average (z-scores near 0). This group perceived leadership, communication, support, fairness, rewards, appraisal and work–life balance as neither strongly positive nor strongly negative. **Outcomes:** Employee Engagement M = 3.7182 and Job Satisfaction M = 3.9512 (middle level compared with other clusters).

Cluster 2 (n = 80; 29.7%)

High Driver Perception Cluster

Profile: Strongly above-average perceptions across all engagement drivers (positive z-scores around 0.8 to 1.0). This group reported the most favourable views of leadership, communication, organisational support, equal opportunity, training and development, work itself, rewards, performance appraisal and work–life balance. **Outcomes:** Highest Employee Engagement M = 4.1167 and highest Job Satisfaction M = 4.5950.

Cluster 3 (n = 66; 24.5%)

Low Driver Perception Cluster

Profile: Consistently below-average perceptions across all engagement drivers (negative z-scores around −0.7 to −1.0). This group reported weaker perceptions of leadership, communication, support, development, rewards, appraisal, fairness and work–life balance. **Outcomes:** Lowest Employee Engagement M = 3.4545 and lowest Job Satisfaction M = 3.1788.

Table 10 Cluster Means for Outcomes

Outcome	Cluster	N	M	SD	SE
Employee Engagement	1	123	3.7182	0.39471	0.03559
	2	80	4.1167	0.448	0.05009
	3	66	3.4545	0.49315	0.0607
Job Satisfaction	1	123	3.9512	0.40191	0.03624
	2	80	4.595	0.65059	0.07274
	3	66	3.1788	0.67948	0.08364

Cluster means indicated clear differences in outcomes (Table 10):

Employee Engagement: Cluster 2 reported the highest engagement (M = 4.1167, SD = 0.4480), followed by Cluster 1 (M = 3.7182, SD = 0.3947), while Cluster 3 reported the lowest (M = 3.4545, SD = 0.4932).

Job Satisfaction: Cluster 2 reported the highest satisfaction (M = 4.5950, SD = 0.6506), followed by Cluster 1 (M = 3.9512, SD = 0.4019), while Cluster 3 reported the lowest (M = 3.1788, SD = 0.6795). Confidence intervals supported the same ordering, with limited overlap between the high and low clusters.

Table 11 Levene's Test (Homogeneity of variances)

Outcome	Levene statistic	df1	df2	p
Employee Engagement	4.87	2	266	0.008
Job Satisfaction	12.447	2	266	0

Levene's tests were significant for both outcomes, Employee Engagement ($p = .008$) and Job Satisfaction ($p < .001$) (Table 11). It is indicating unequal variances across clusters. Therefore, robust interpretation of mean differences and effect size reporting is important (Field, 2018).

One-way ANOVA for Outcomes (Clusters as Grouping Variable): Employee Engagement and Job Satisfaction.

Table 12. One-way ANOVA for Outcomes

Outcome	Source	Sum of Squares	df	Mean Square	F	p
Employee Engagement	Between groups	16.511	2	8.256	43.339	<.001
	Within	50.671	266	0.19		

	groups					
	Total	67.182	268			
Job Satisfaction	Between groups	72.534	2	36.267	116.012	<.001
	Within groups	83.156	266	0.313		
	Total	155.69	268			

There were significant differences across clusters for both outcomes: Employee Engagement: $F(2, 266) = 43.339$, $p < .001$., Job Satisfaction: $F(2, 266) = 116.012$, $p < .001$. This indicates that cluster membership based on engagement-driver perceptions was associated with differences in both employee engagement and job satisfaction.

Post Hoc Comparisons (Tukey HSD) – Unique Cluster Pairs

Table 13 Post Hoc Comparisons (Tukey HSD) – Unique Cluster Pairs

Outcome	I (Cluster)	J (Cluster)	Mean diff (I−J)	SE	p
Employee Engagement	1	2	-0.39851	0.06269	<.001
	1	3	0.26361	0.0666	<.001
	2	3	0.66212	0.07258	<.001
Job Satisfaction	1	2	-0.64378	0.08031	<.001
	1	3	0.77243	0.08531	<.001
	2	3	1.41621	0.09297	<.001

All pairwise cluster comparisons were significant (all $p < .001$) (Table 13):

Employee Engagement: Cluster 2 scored higher than Cluster 1 (mean diff = 0.3985) and Cluster 3 (mean diff = 0.6621), while Cluster 1 scored higher than Cluster 3 (mean diff = 0.2636).

Job Satisfaction: Cluster 2 scored higher than Cluster 1 (mean diff = 0.6438) and Cluster 3 (mean diff = 1.4162), while Cluster 1 scored higher than Cluster 3 (mean diff = 0.7724).

This confirms a consistent ordering of outcomes: Cluster 2 (high driver perceptions) > Cluster 1 (moderate) > Cluster 3 (low).

Homogeneous Subsets

Table 14 Homogeneous Subsets (Tukey HSD)

Outcome	Cluster	N	Subset mean (ascending)
Employee Engagement	3	66	3.4545
	1	123	3.7182
	2	80	4.1167
Job Satisfaction	3	66	3.1788
	1	123	3.9512
	2	80	4.595

Homogeneous subsets showed the same ordering for both outcomes, with Cluster 3 forming the lowest mean subset, Cluster 1 in the middle, and Cluster 2 in the highest mean subset for Employee Engagement and Job Satisfaction. This supports the interpretation that clusters represent progressively stronger driver perceptions linked with progressively higher engagement and satisfaction (Table 14). The findings supported the person-centred argument in the literature review that employees do not experience engagement drivers uniformly and can be grouped into distinct perception profiles.

Cluster differences on outcomes showed that driver-based profiles translated into meaningful differences in employee engagement and job satisfaction. Employees in the high driver-perception cluster reported the highest engagement and satisfaction, the moderate cluster showed mid-level outcomes, and the low driver-perception cluster reported the lowest outcomes. This ordering was consistent with evidence that engagement and satisfaction rise when employees experience supportive management practices, clear communication and fair treatment (Saks, 2006; Bin Shmailan, 2016). It also matched cross-country findings that higher engagement is associated with higher job satisfaction (Vorina et al., 2017; Abderrahim & İyigün, 2023) and with results that workplace drivers such as working environment, training and development and rewards are linked with both engagement and satisfaction (Chaudhry et al., 2017; Ang & Rabo, 2018; Garg et al., 2017). The results therefore reinforced the practical idea highlighted in the literature review that differences in how employees perceive the workplace can explain why some employees are more engaged and satisfied than others within the same context.

7. Conclusion

This study addressed the research gap by moving beyond variable-centred relationships and using clustering to identify employee segments based on patterns of engagement-driver perceptions. The analysis produced three interpretable clusters high, moderate and low perceptions of engagement drivers and these groups differed significantly in both employee engagement and job satisfaction. The strongest separation occurred between the high- and low-perception clusters, showing that employees who viewed leadership, support, development, rewards and work–life balance more positively also reported better work outcomes. This contributes context-specific evidence that complements earlier findings from different countries and sectors by showing that a segmentation approach can summarise complex driver perceptions into actionable employee profiles (Bedarkar & Pandita, 2014; Saks, 2006;

Vorina et al., 2017). The study concluded that engagement drivers work as an interconnected set of workplace conditions rather than isolated practices, and employee groups formed around these perceptions show clear differences in engagement and job satisfaction. Job satisfaction differences were especially pronounced, which was consistent with prior work suggesting satisfaction is closely tied to day-to-day job conditions and organisational practices (Bin Shmailan, 2016; Ang & Rabo, 2018) and with measurement research noting conceptual overlap between engagement and satisfaction (Nimon et al., 2015). By identifying distinct employee profiles and linking them with engagement and satisfaction outcomes, the study provided a practical basis for understanding "which type of employees" exist in the workplace and how their work attitudes differ, directly meeting both research objectives. The sample was drawn using convenience sampling from manufacturing employees in Gujarat and data were collected through an online survey, which may limit generalizability and may introduce self-selection and common method bias because drivers and outcomes were captured from the same source (Podsakoff et al., 2003). Clustering outcomes can depend on analytical choices such as selected number of clusters; although steps were taken to stabilise the solution, alternative specifications could yield slightly different cluster memberships (Hair et al., 2019).

In future studies, measurement can be improved by refining the employee engagement scale to achieve stronger reliability and by including additional organisational outcomes like intention to stay, performance or absenteeism to extend usefulness of employee segmentation.

8. References

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