

PCA Analysis

• PCA Loadings Table

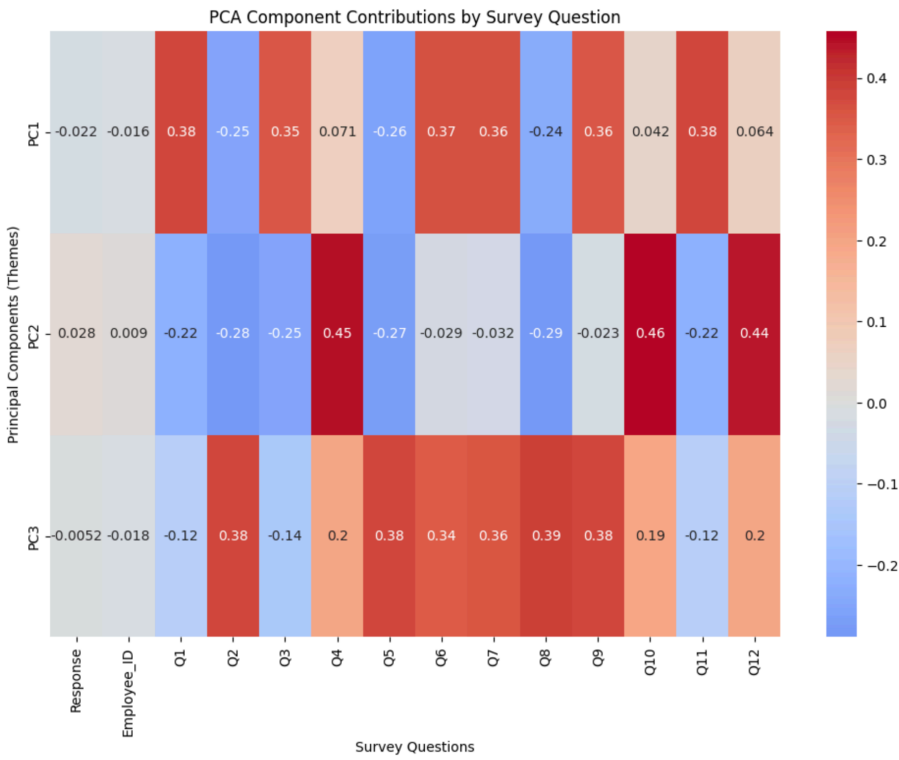
The below table shows the loading values for each question, indicating their relationship with each principal component.

	Response	Employee_ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
PC1 (Skill Development)	-0.0216	-0.0165	0.3782	-0.2523	0.3518	0.0709	-0.2592	0.3668	0.362	-0.2363	0.3553	0.0422	0.3782	0.0642
PC2 (Operational Focus)	0.0283	0.009	-0.2226	-0.2776	-0.2495	0.4453	-0.2687	-0.0285	-0.032	-0.2888	-0.0232	0.4577	-0.2226	0.4415
PC3 (Career Advancement)	-0.0052	-0.0181	-0.1159	0.3832	-0.1393	0.1988	0.3818	0.3433	0.3601	0.3932	0.3752	0.195	-0.1159	0.2004

• PCA-Questions Heatmap

The below heatmap illustrates the contribution of each survey question to the top three themes (Skill Development, Operational Focus, and Career Advancement) identified through PCA. Each cell's color and value indicate the strength and direction of a survey question's relationship with a particular theme.

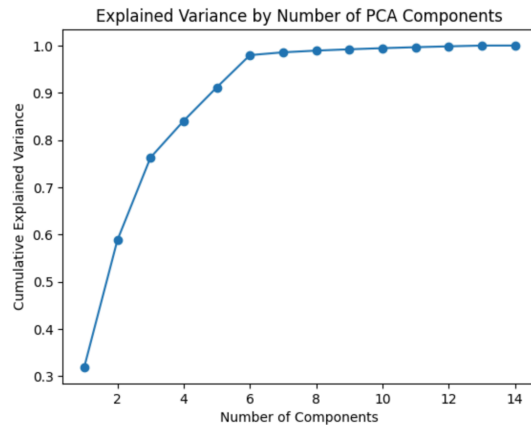
This heatmap helped us understand which survey questions are most relevant to each theme, providing targeted insights into employee motivations.



- **Scree Plot to determine the Number of Components**

The first three components explain a significant portion of the variance, capturing over 75% of the total variance in the data.

PC1, PC2, and PC3 were chosen as the primary components for further analysis, representing the themes of Skill Development, Operational Focus, and Career Advancement respectively.



- **PCA – Explained Variance**

Below table again shows Explained Variance for each Principal Component:

Principal Component	Explained Variance
PC1 (Skill Development)	31.90%
PC2 (Operational Focus)	26.90%
PC3 (Career Advancement)	17.50%

The first three components capture a total of 76.3% of the variance, making them the primary themes in the data.

● **Cluster Centers Table**

The below table provides insight into the primary motivations for each cluster:

Cluster	PC1 (Skill Development)	PC2 (Operational Focus)	PC3 (Career Advancement)
Cluster 0	-0.523536	0.47005	1.847138
Cluster 1	-0.030356	1.788733	-1.562756
Cluster 2	3.84508	-2.353189	-0.332805
Cluster 3	-3.68605	-3.293416	-1.128718

The above table displays the average scores on each principal component for each cluster, highlighting the dominant themes and motivational profiles of each group:

PC1 (Skill Development): Positive values suggest a motivation for training and skill enhancement, while negative values indicate a lack of interest.

PC2 (Operational Focus): Positive values reflect a focus on structured tasks and operational efficiency, while negative values suggest less interest in routine or task-oriented work.

PC3 (Career Advancement): Positive values indicate a desire for career growth and advancement, while negative values imply a lack of focus on career progression.

● **City-wise Motivations Heatmap**

The below heatmap shows city-wise variations in employee motivations based on the three identified themes: PC1 (Skill Development), PC2 (Operational Focus), and PC3 (Career Advancement). Each cell contains the average score for a particular theme in a specific city, with colors indicating the strength and direction of association (positive or negative).

