**Shan Ali Shah Sayed**

**PCA Analysis**

* **PCA Loadings Table**

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



* **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.

A screenshot of a graph

Description automatically generated

* **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.

A graph with a line

Description automatically generated

* **PCA – Explained Variance**

Below table again shows Explained Variance for each Principal Component:

****

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:



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).

**A chart with blue squares

Description automatically generated**