Original data shape: (60000, 1, 28, 28)

Reshaped data shape: (60000, 784)

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Number of features to retain for 95.0% variance: 154

PCA Reduced data shape: (60000, 154)

Starting t-SNE embedding on PCA reduced dataset...

[t-SNE] Computing 91 nearest neighbors...

[t-SNE] Indexed 60000 samples in 0.016s...

[t-SNE] Computed neighbors for 60000 samples in 62.745s...

[t-SNE] Computed conditional probabilities for sample 1000 / 60000

[t-SNE] Computed conditional probabilities for sample 2000 / 60000

[t-SNE] Computed conditional probabilities for sample 3000 / 60000

[t-SNE] Computed conditional probabilities for sample 4000 / 60000

[t-SNE] Computed conditional probabilities for sample 5000 / 60000

[t-SNE] Computed conditional probabilities for sample 6000 / 60000

[t-SNE] Computed conditional probabilities for sample 7000 / 60000

[t-SNE] Computed conditional probabilities for sample 8000 / 60000

[t-SNE] Computed conditional probabilities for sample 9000 / 60000

[t-SNE] Computed conditional probabilities for sample 10000 / 60000

[t-SNE] Computed conditional probabilities for sample 11000 / 60000

[t-SNE] Computed conditional probabilities for sample 12000 / 60000

[t-SNE] Computed conditional probabilities for sample 13000 / 60000

[t-SNE] Computed conditional probabilities for sample 14000 / 60000

[t-SNE] Computed conditional probabilities for sample 15000 / 60000

[t-SNE] Computed conditional probabilities for sample 16000 / 60000

[t-SNE] Computed conditional probabilities for sample 17000 / 60000

[t-SNE] Computed conditional probabilities for sample 18000 / 60000

[t-SNE] Computed conditional probabilities for sample 19000 / 60000

[t-SNE] Computed conditional probabilities for sample 20000 / 60000

[t-SNE] Computed conditional probabilities for sample 21000 / 60000

[t-SNE] Computed conditional probabilities for sample 22000 / 60000

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[t-SNE] Computed conditional probabilities for sample 30000 / 60000

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[t-SNE] Computed conditional probabilities for sample 58000 / 60000

[t-SNE] Computed conditional probabilities for sample 59000 / 60000

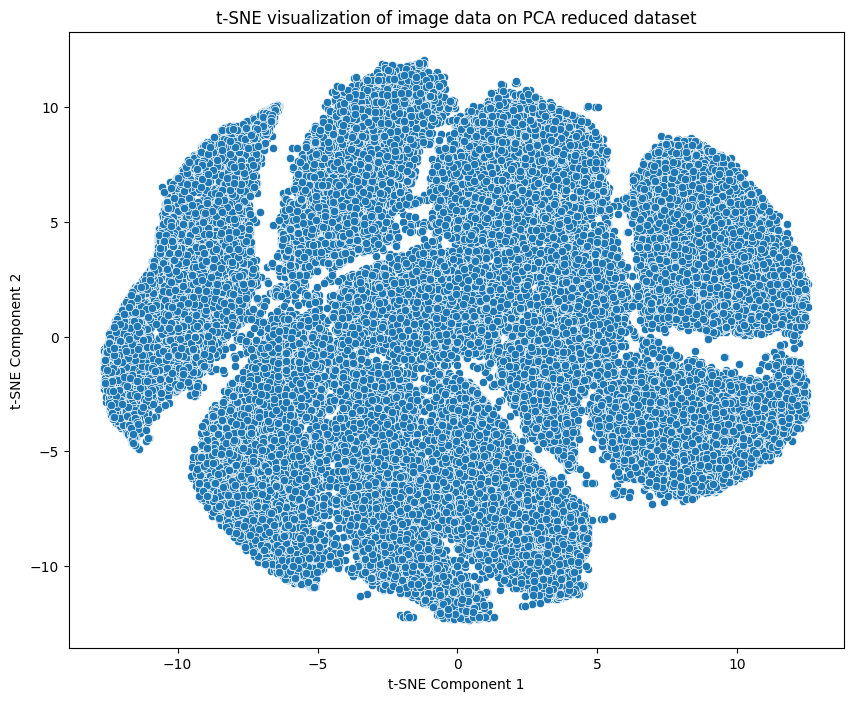
[t-SNE] Computed conditional probabilities for sample 60000 / 60000

[t-SNE] Mean sigma: 0.006129

[t-SNE] KL divergence after 250 iterations with early exaggeration: 96.345726

[t-SNE] KL divergence after 300 iterations: 4.277635

t-SNE embedding finished on PCA reduced dataset.



**Silhouette Score: 0.0793 for K 8 using KMEANS and Variance Coverage 95.0%**

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A black and white photo of numbers

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A black and white photo of numbers and symbols

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A black and white image of numbers

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A black and white image of a person's face

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**Metrics for RandomForest classifier**

Training RandomForest classifier on reshaped full training set...

(RandomForest) Image Classifier - Train accuracy: 1.0000, Validation accuracy: 0.9327, Confidence: [0.89 0.98 0.89 ... 0.77 1. 0.95]

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**Metrics for KNearestNeighbour** **classifier**

Training KNearestNeighbour classifier on reshaped full training set...

(KNearestNeighbour) Image Classifier - Train accuracy: 0.9415, Validation accuracy: 0.9104, Confidence: [1. 1. 1. ... 0.6 1. 1. ]

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