

## Constructing a Composite Vegetable Price Index Using Modified Factor Analysis

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This study introduces a modified factor analysis approach to develop a composite vegetable price index. The new method uses scaling by dividing the original variables with its mean, a specific weight for each individual indicator variable and the index assigns a specific numerical value to prices of vegetables for a given month. Monthly wholesale prices of nineteen vegetables were considered. As some vegetable prices were highly correlated, ten representative variables for highly correlated variables were retained based on variable-cluster analysis and correlation analysis. The grouping pattern in the data was identified through a Preliminary Factor Analysis. This resulted in a single factor explaining a substantial amount of the total variance. The original variables were divided by their means to scale the variables. The weight corresponding to a particular indicator variable was defined by squaring the Eigenvector coefficient of the given variable of the first Principle Component. Then the scaled variables were weighted and used in the final Factor Analysis. A single factor explaining 69.8% variance was selected as the composite index. First, the Vegetable Price Index was defined as a linear function of the composite index. Then it was converted into a function of original indicator variables by summarizing constant terms to make it easy to update. Cronbach's alpha was used to verify the internal consistency of the indicator variables. This method is not sensitive to variables having comparatively higher variances because of their means. Scaling in mean and weighting improved explaining variance and internal consistency of the variables.

**Keywords:** Composite Index, vegetable price Index, modified factor analysis