Package 'fucom'

March 14, 2025

Type Package

Title Full Consistency Method (FUCOM)

Version 0.0.4

Description Full Consistency Method (FUCOM) for multi-criteria decision-making (MCDM), developed by Dragam Pamucar in 2018 (<doi:10.3390/sym10090393>). The goal of the method is to determine the weights of criteria such that the deviation from full consistency is minimized. Users provide a character vector specifying the ranking of each criterion according to its significance, starting from the criterion expected to have the highest weight to the least significant one. Additionally, users provide a numeric vector specifying the priority values for each criterion. The comparison is made with respect to the first-ranked (most significant) criterion. The function returns the optimized weights for each criterion (summing to 1), the comparative priority (Phi) values, the mathematical transitivity condition (w) value, and the minimum deviation from full consistency (DFC).

Language en-US

Depends R (>= 4.2.0)

License GPL (>= 3)

Imports nloptr, stats

Encoding UTF-8

RoxygenNote 7.3.1

Suggests knitr, rmarkdown, spelling, testthat (>= 3.0.0)

VignetteBuilder knitr

Config/testthat/edition 3

NeedsCompilation no

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Repository CRAN

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`fucom_method` *Implementation of Full Consistency Method (FUCOM) for multi-criteria decision making. More information about the method at https://doi.org/10.3390/sym10090393. More information about the implementation at https://github.com/mateusvanzetta/fucom. The goal is to determine the weights of criteria such that the deviation from full consistency (DFC) is minimized.*

Description

Implementation of Full Consistency Method (FUCOM) for multi-criteria decision making. More information about the method at https://doi.org/10.3390/sym10090393. More information about the implementation at https://github.com/mateusvanzetta/fucom. The goal is to determine the weights of criteria such that the deviation from full consistency (DFC) is minimized.

Usage

```
fucom_method(criteria_rank, criteria_priority, DFC_threshold = 0.025)
```

Arguments

`criteria_rank`	A character vector specifying the rank of each criterion.
`criteria_priority`	A numeric vector specifying the priority values of each criterion.
`DFC_threshold`	A numeric value specifying the threshold for the deviation from full consistency (DFC). It must be a positive number and less than or equal to 0.025. Default is 0.025.

Value

A list containing:

weights A numeric vector of the optimized weights for each criterion, summing to 1.

Phi A numeric vector of comparative priority (Phi) values.

w A numeric vector of the condition of mathematical transitivity (w) values.

DFC The minimum deviation from full consistency (DFC) value.

Examples

```
criteria_rank <- c("Criterion 1", "Criterion 2", "Criterion 3",
 "Criterion 4", "Criterion 5", "Criterion 6", "Criterion 7", "Criterion 8")
criteria_priority <- c(1, 1, 1, 2, 4, 4, 4, 4)
results <- fucom_method(criteria_rank, criteria_priority)
results$weights
results$Phi
results$w
results$DFC
```

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