

INTISARI

MODIFIED LFPP UNTUK MENINGKATKAN AKURASI CONSISTENCY INDEX MATRIKS PERBANDINGAN BERPASANGAN PADA EVALUASI USABILITY E-COMMERCE

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Evaluasi *usability* berfokus pada kenyamanan pengguna dalam mempelajari situs web. Pengukuran *usability* situs web *e-commerce* dapat dilakukan dengan menggunakan metode *Fuzzy Analytical Hierarchy Process* (FAHP). Hal ini karena struktur kriteria yang rumit, sehingga dapat dianggap persoalan multi-kriteria. Metode penurunan bobot kriteria FAHP dengan pendekatan *non-linear programming*, diantaranya *Logarithmic Fuzzy Preference Programming* (LFPP). Kekurangan pada metode LFPP dalam beberapa kasus menghasilkan *consistency index* $\lambda^*=0$ dari matriks perbandingan *fuzzy* yang konsisten, yang seharusnya $\lambda^*>0$.

Penelitian ini memodifikasi metode LFPP dengan model *Extended Consistent Fuzzy Preference Relation* (ECFPR) dan *Modified LFPP* (MLFPP). Modifikasi dilakukan untuk meningkatkan akurasi nilai (λ^*) sebelum melakukan pembobotan kriteria pada LFPP. Model ECFPR membentuk matriks berpasangan baru dengan mempertimbangkan nilai *lower* dan *upper* pada bilangan *triangular fuzzy* dari perbandingan sejumlah $n-1$, di mana n adalah jumlah kriteria. Model MLFPP melakukan perbaikan pada batasan fungsi dan penentuan bobot kriteria. Model MLFPP menggunakan \arctan untuk batas fungsi untuk meningkatkan akurasi nilai *consistency index*.

Hasil pengujian menunjukkan bahwa model ECFPR dan MLFPP dapat meningkatkan akurasi nilai *consistency index* pada matriks perbandingan berpasangan yang diberikan oleh pakar menjadi lebih dari 0, dengan kenaikan rata-rata λ^* sebesar 0,34% (ECFPR) dan 14,9% (MLFPP). Perubahan nilai λ^* telah meningkatkan *usability score* sebanyak 1,07% (ECFPR) dan 6,59% (MLFPP).

Kata kunci : *Usability, Fuzzy Analytical Hierarchy Process, Logarithmic Fuzzy Preference Programming, Consistent Fuzzy Preference Relation, E-Commerce.*

ABSTRACT

MODIFIED LFPP TO IMPROVED THE ACCURACY OF MATRIX PAIRWISE COMPARISON CONSISTENCY INDEX IN THE USABILITY E-COMMERCE EVALUATION

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Usability evaluation focuses on how well users can learn and use products to achieve their goals. Measurement of e-commerce website usability can be done using the Fuzzy Analytical Hierarchy Process (FAHP) method. Usability is considered a multi-criteria problem due to its complex structure. The process of weighting the FAHP criteria can be done with a non-linear programming approach, namely Logarithmic Fuzzy Preference Programming (LFPP). However, deficiencies in the LFPP method, in some cases, result in a consistency value of 0 from a consistent fuzzy comparison matrix, which should be greater than 0.

This study modifies the LFPP method with the Extended Consistent Fuzzy Preference Relations (ECFPR) and Modified LFPP (MLFPP) models. Modifications were made as a development of the LFPP method in increasing the accuracy of the value (λ^*) used as a consistency index (CI) before weighting criteria. The ECFPR model forms a new paired matrix by considering the lower and upper values of a fuzzy triangular number only from the ratio of the number $n-1$, where n is the number of criteria. The MLFPP model makes improvements to the functional constraints, while at the same time improving the determination of criteria weights. The MLFPP model uses arctan to limit functions to improve CI.

The test results shows that the ECFPR and MLFPP models can improve the accuracy of the consistency index values in the pairwise comparison matrix given by experts to be more than 0, with an average increase of 0.34% (ECFPR) and 14.9% (MLFPP). The value of λ^* changes has improved the usability score by 1.07% (ECFPR) and 6.59% (MLFPP).

Keyword : Usability, Fuzzy Analytical Hierarchy Process, Logarithmic Fuzzy Preference Programming, Consistent Fuzzy Preference Relation, e-commerce.