ABSTRAK

Perkembangan pesat teknologi *smartphone* menghadirkan tantangan bagi *User* dalam menentukan perangkat yang sesuai kebutuhan. Penelitian ini bertujuan mengembangkan sistem rekomendasi *smartphone* berbasis *graph* dengan menerapkan algoritma *Random walk*. Entitas *smartphone* dan fitur-fiturnya direpresentasikan sebagai simpul (node) dalam graf, dihubungkan berdasarkan kesamaan fitur seperti merek, harga, RAM, dan baterai. Sistem membentuk matriks adjacency dari graf, lalu dinormalisasi menjadi matriks transisi untuk mendefinisikan probabilitas perpindahan antar node. Algoritma *Random walk* dijalankan dari node awal pilihan *User* dan menghitung distribusi probabilitas menggunakan rumus $Pt = (MT)t \cdot P0$. Nilai probabilitas akhir menjadi dasar rekomendasi. Sistem dilengkapi fitur filter preferensi *User* dan umpan balik. Hasil evaluasi dengan pendekatan *Perceived of Ease of Use* dan *Perceived of Usefulness* menunjukkan skor rata-rata sebesar 4,04 untuk *Perceived of Ease of Use dan 4,02* untuk *Perceived of Usefulness* yang mencerminkan *User* dalam menggunakan sistem rekomendasi *smartphone* ini.

Kata kunci: sistem rekomendasi, *graph*, *random walk*, *smartphone*, matriks, *perceived of usefulness* dan *perceived of ease of use*

ABSTRACT

The rapid advancement of smartphone technology presents challenges for users in selecting devices that align with their individual needs and preferences. This study aims to develop a graph-based smartphone recommendation system by implementing the Random Walk algorithm. In this system, smartphones and their features are represented as nodes in a graph, connected based on feature similarities such as brand, price, RAM, and battery capacity. The system constructs an adjacency matriks from the graph, which is then normalized into a transition matriks to define the probability of movement between nodes. The Random Walk algorithm is executed from a starting node selected by the user, and the probability distribution is calculated using the formula $Pt = (MT)t \cdot P0$. The resulting probabilities serve as the basis for generating personalized smartphone recommendations. The system also includes user preference filters and feedback mechanisms to refine recommendation accuracy. Evaluation using the Technology Acceptance Model (TAM), specifically the *Perceived Ease of Use* and *Perceived Usefulness* constructs, yielded average scores of **4.04** and **4.02**, respectively. These results indicate that the system is both easy to use and beneficial in assisting users with smartphone selection.

Keywords: recommendation system, *graph*, *random walk*, *smartphone*, matrix, *perceived of usefulness* and *perceived of ease of use*