ABSTRAK

Danang Adi Nur Saputro. 2026. Sistem Berbasis *Single Exponential Smoothing* Untuk Penentuan Harga Produk Pada *E-Commerce* GADISmart Tech. Program Studi Teknik Informatika, Fakultas Teknik, Universitas PGRI Madiun. Pembimbing (I) Puguh Jayadi, S.Kom., M.Kom. Pembimbing (II) Yoga Prisma Yuda, S.Kom., M.Kom.

Penentuan harga produk pada *e-commerce* memerlukan strategi yang tepat agar mampu meningkatkan daya saing penjual. Penelitian ini bertujuan mengembangkan sistem peramalan harga produk berbasis web pada *e-commerce* GADISmart Tech menggunakan metode *Single Exponential Smoothing* (SES). Penelitian ini menggunakan metode pengembangan *Waterfall*. Sistem menerapkan metode *Single Exponential Smoothing* (SES) untuk melakukan peramalan harga produk berdasarkan data historis transaksi. Tingkat akurasi diukur menggunakan *Mean Absolute Percentage Error* (MAPE) dan *Mean Squared Error* (MSE), sedangkan pengujian sistem dilakukan menggunakan *Black-Box Testing* dan *System Usability Scale* (SUS). Hasil penelitian menunjukkan bahwa sistem mampu melakukan peramalan harga produk serta memberikan rekomendasi harga berdasarkan hasil peramalan. Seluruh fitur sistem berjalan sesuai fungsinya berdasarkan *Black-Box Testing*, sedangkan hasil pengujian SUS menunjukkan bahwa sistem memiliki tingkat kegunaan yang baik. Selain itu, evaluasi menggunakan MAPE dan MSE menunjukkan bahwa metode *single exponential smoothing* menghasilkan tingkat akurasi peramalan yang baik sehingga layak digunakan sebagai dasar dalam penentuan harga produk pada *e-commerce.*

Kata Kunci*: Time Series Forecasting*, *Single Exponential Smoothing*, Peramalan Harga Produk, MAPE, MSE, *E-Commerce.*

ABSTRACT

Danang Adi Nur Saputro. 2026. *Single Exponential Smoothing-Based System for Product Pricing in* GADISmart Tech *E-Commerce. Informatics Engineering Study Program, Faculty of Engineering,* Universitas PGRI Madiun. *Supervisor* (I) Puguh Jayadi, S.Kom., M.Kom. *Supervisor* (II) Yoga Prisma Yuda, S.Kom., M.Kom.

Product pricing in e-commerce requires an appropriate strategy to improve sellers' competitiveness. This study aims to develop a web-based product price forecasting system for the GADISmart Tech e-commerce platform using the Time Series Forecasting method with Single Exponential Smoothing (SES). The system was developed using the Laravel framework and implemented the SES method to forecast product prices based on historical transaction data. Forecasting accuracy was evaluated using Mean Absolute Percentage Error (MAPE) and Mean Squared Error (MSE), while system functionality and usability were assessed through Black Box Testing and the System Usability Scale (SUS). The results show that the system is capable of forecasting product prices and providing product price recommendations based on the forecasting results. All system features functioned properly based on Black Box Testing, while the SUS results indicated that the system achieved a good level of usability. Furthermore, the evaluation using MAPE and MSE demonstrates that the SES method provides good forecasting accuracy, making it suitable for supporting product pricing decisions in e-commerce.

Keywords: Time Series Forecasting, Single Exponential Smoothing, Product Price Forecasting, MAPE, MSE, E-Commerce.