ABSTRAK

E-commerce sebagai media berbelanja *online* banyak digunakan oleh konsumen. Saat konsumen berbelanja banyak produk ditawarkan maka terjadi *information overload*. Solusi dari *information overload* adalah rekomendasi produk. Pembuatan rekomendasi produk memerlukan data ketertarikan konsumen terhadap produk dan data pembelian produk. Berbagai macam metode pengumpulan data ketertarikan memerlukan interaksi motorik konsumen untuk memberikan *rating*, ulasan, memberikan klik *mouse* pada produk tersebut ataupun dengan menggunakan kuesioner. Metode tersebut belum dapat menangkap informasi yang tersimpan pada pikiran konsumen pada saat melihat produk. Dalam bidang ilmu *neuromarketing*, sensor dimanfaatkan untuk menangkap kognitif konsumen terhadap produk. Penggunaan sensor untuk menangkap ketertarikan konsumen terhadap produk selain dapat menangkap kognitif konsumen, juga dapat memberikan solusi terhadap permasalahan rekomendasi produk, yaitu *sparsity* dan *cold start*. Pemilihan metode rekomendasi produk juga dapat menyelesaikan masalah *scalability*. Dengan adanya identifikasi masalah tersebut, maka dibangun model Rekomendasi Produk berbasis *Eye Tracking* pada Layanan *E-commerce* (RET) dengan metode rekomendasi produk *Item to Item Collaborative Filtering*.

RET membutuhkan data prediksi pembelian. Data prediksi pembelian produk berbasis data *eye tracking* memerlukan *memory-based factor* dalam hal ini *brand preference* yang menggunakan data *eye tracking*, sehingga dibangun model *Memory-based factor* berbasis *Eye Tracking* (MET). Data ketertarikan konsumen yang ditangkap oleh *eye tracker* dapat berada di *Area of Interest* (AOI) komponen produk, yaitu pada model, merk, dan harga. Berdasarkan data tersebut dibangun model rekomendasi produk berbasis *eye tracking* pada layanan *e-commerce* berdasarkan komponen produk (RETK) yang menghasilkan rekomendasi produk berdasarkan ketertarikan konsumen terhadap model, merk dan harga. Ketiga model tersebut adalah *novelty* dari penelitian ini.

Pengujian terhadap ketiga model tersebut dilakukan, mulai dari model MET sebagai input dari model RET dan RETK. Hasil pengujian model MET menghasilkan nilai akurasi 67%. Hasil pengujian model RET cukup memuaskan meskipun belum mendekati nilai MAE dari metode *Item based Collaborative Filtering*. Nilai MAE PET adalah 1,8. Dari hasil analisis rekomendasi produk yang dihasilkan, RET dapat menjadi solusi bagi permasalahan *sparsity* dan *cold start*. Hasil pengujian RETK dengan nilai MAE 2,19 untuk rekomendasi produk berdasarkan model, 1,88 untuk rekomendasi produk berdasarkan merk dan 1,54 untuk rekomendasi produk berdasarkan harga. Nilai tersebut hampir sama dengan nilai MAE RET, meskipun nilai MAE harga lebih kecil. Hasil analisis rekomendasi produk berdasarkan komponen produk tersebut dapat memberikan informasi kepada marketing mengenai ketertarikan konsumen yang sesuai

dengan karakteristik konsumen. Sedangkan rekomendasi produk yang dihasilkan dapat memberikan solusi *information overload* pada konsumen dalam berbelanja.

Kata Kunci :
information overload, *cold start*, *sparsity*, *brand preference*, *memory-based factor*, *attention-based factor*, *eye tracking*, *rekomendasi produk*

ABSTRACT

E-commerce as a online shopping media is widely used by consumers. When consumers shop, they are offered many products, so there is much information about the products. It is called information overload. The solution of information overload is product recommendation. Making product recommendations requires consumer interest data on products and product purchase data. Various methods of collecting interest data of product require consumer motoric interactions to provide ratings, reviews, give mouse clicks on the product or collecting the consumer interest data on product using a questionnaire. The method has not been able to capture the information stored on the consumer's mind when viewing the product. In Neuromarketing, sensors are used to capture consumers' cognitive products. Sensors are used to capture consumer interest in the product in addition to capture cognitive consumers, can also provide solutions to product recommendation problems, namely sparsity and cold start. Another problem of product recommendation is scalability. This problem is solved by Item to Item Collaborative Filtering, the method of product recommendation. Based on this identification of e-commerce problems, the Recommendation Product based on Eye Traking in E-commerce services (RET) model was proposed with Item to Item Collaborative Filtering.

RET requires product purchase data. The prediction of product purchase data based on eye tracking data requires memory-based factor in this case brand preference that uses eye tracking data, so that a model of Memory-based factor based Eye Tracking (MET) is proposed. Eye tracker can catch the consumer interest data on the Area of Interest (AOI) of product component, which is model, brand and price. Based on these data, a model of 'Recommendation Product based on Eye Tracking in E-commerce Services based on component product' (RETK) is developed. The results of RETK are product recommendations based on consumer interest in the model of product, brand of product and price of product. The Memory-based factor based on Eye Tracking Model, The Product Recommendation based on Eye Tracking in E-commerce Services and The Product Recommendation based on Eye Tracking in E-commerce Services based on Product Component are the novelty of the research.

The examination of the three models was carried out. The examination was started from the MET model as input from the RET and RETK models. The value of accuracy of MET model is 67%. So it can be used as input in RET and RETK model. The examination of RET model using MAE (Mean Absolute Error). The value of MAE of RET model is 1.8. The less MAE value, the better the product recommendation performance. When compared to Recommendation Product based on Rating in Ecommerce Services (PR) using the same method of product recommendations, the same number of participants, the MAE PR value is 3.4. From the result of the analysis, the RET can become the solution of sparsity and cold start, the problem of product recommendation and can also be the solution to information overload. The examination of RETK produces MAE value which are 2.19 for product recommendation based on consumer interest on model of product, 1.88 for product recommendation based on consumer interest on brand of product, and 1.54 for product recommendation based on consumer interest on price of product. From the result of the analysis, the RETK can

give information to marketing about consumer interest in product according to the types of consumer.

Keywords :
information overload, cold start, sparsity, brand preference, memory-based factor, attention-based factor, eye tracking, product recommendation