

INTISARI

Kemampuan mengidentifikasi kebutuhan konsumen dan merancang suatu produk dengan cepat, yang sesuai dengan kebutuhan tersebut, serta dengan biaya yang seminimal mungkin, merupakan hal yang menentukan kesuksesan ekonomi suatu perusahaan. Dari keseluruhan proses perancangan produk, tahap memahami dan menerjemahkan kebutuhan konsumen, sehingga produk yang ditawarkan mampu menarik perhatian masyarakat, merupakan tahap yang paling penting untuk dilakukan. Namun, metode identifikasi kebutuhan pelanggan secara konvensional, terlebih dalam tahap pengumpulan *voice of customer*, belum memberikan performa yang baik dalam efisiensi waktu dan biaya yang digunakan. Guna meningkatkan performa tahapan tersebut, banyak dikembangkan metode analisis sentimen untuk memahami *feedback* konsumen pada ulasan *online* produk, yang saat ini memiliki jumlah yang sangat banyak akibat maraknya perkembangan teknologi. Pada penelitian sebelumnya, ditemukan bahwa *aspect-based sentiment analysis*, yang menerapkan metode *unsupervised learning*, mampu memberikan informasi yang mendalam terkait *feedback* konsumen. Namun, kerangka kerja yang menyeluruh belum dibahas pada penelitian sebelumnya.

Penelitian ini berfokus pada perancangan kerangka kerja identifikasi sentimen fitur produk pada ulasan *online* menggunakan *aspect-based sentiment analysis*, untuk memahami *feedback* konsumen secara lebih dalam terkait bagian-bagian penyusun suatu produk (fitur), dengan bahasa pemrograman Python. Proses identifikasi ini dilakukan dengan metode *unsupervised classification-sentiment lexicon* dalam menentukan arah orientasi sentimen, dan metode *unsupervised learning-word2vec* yang menggunakan *word knowledge*, dalam menentukan kelompok pasangan kata terkait detail fitur. Adapun terdapat enam tahapan utama yang harus dilakukan, yaitu 1) Tahap Pengambilan Data, 2) Tahap Seleksi Data, 3) Tahap Pemrosesan Data Awal, 4) Tahap Analisis Data, 5) Tahap Visualisasi Data, dan 6) Tahap Validasi *Expert*. Guna melakukan seluruh tahapan tersebut, terdapat dua domain utama yang harus berkolaborasi, yaitu 1) Domain aktif, yang terdiri atas analis dan *designer*, serta 2) Domain pasif, yang terdiri atas *WordNet database* dan platform *e-commerce*.

Hasil penelitian menunjukkan bahwa kerangka kerja yang digunakan mampu memberikan informasi terkait tendensi sentimen *customer* pada fitur produk tertentu, serta penyebab penilaian tersebut, melalui satu visualisasi hasil akhir. Penyebab penilaian tersebut digambarkan dengan menggunakan pasangan kata bernilai sentimen positif dan negatif untuk suatu fitur tertentu. Adapun performa analisis sentimen yang digunakan pada penelitian ini, memiliki nilai akurasi sebesar 75,89%, presisi sebesar 78,33%, *recall* sebesar 89,1%, dan *F1-score* sebesar 83,37%.

Kata kunci: *Aspect-Based Sentiment Analysis, Identification Customer Needs, Online Review, Product Feature Identification, Sentiment Analysis, Unsupervised Learning, Voice of Customer, Word Knowledge*

ABSTRACT

The ability for identifying customer needs and designing a product in a short time, that fits the needs in the market, and also with the least amount of resource, is a factor that determines the company's economic success. From all the designing product phases, understanding and translating the customer need stage, until the offered product can attract the society, is the most critical step that has to be done. However, the conventional customer need identification methods, especially in the *voice of customer* phase, can not satisfy enough the company, because of the abundant resources of money and time needed. Then, for increasing the performance of existing method, sentiment analysis has been developed much to understand customer feedback in online product reviews, which currently have an enormous amount due to the proliferation of technological developments. In previous researches, it is found that the aspect-based sentiment analysis, that uses the unsupervised learning method, can give more detail information related to the customer feedback. However, the comprehensive framework has not been discussed in the previous research.

This research focused on designing a framework for identifying product features sentiment on online reviews using aspect-based sentiment analysis, for understanding the customer feedback more deeply about the constituent parts of a product (feature), using programming language-Python. The identification process uses the method of unsupervised classification-sentiment lexicon in determining the direction of sentiment orientation, and the method of unsupervised learning-word2vec that uses word knowledge, in determining groups of word pairs related to feature details. There are four stages that have to be done, namely 1) Data Collection Phase, 2) Data Selection Phase, 3) Initial Data Processing Phase, 4) Data Analysis Phases, 5) Data Visualization Phase, and 6) Expert Validation Phase. In order to carry out all these stages, there are two main domains that must collaborate, namely 1) Active domain, which consists of analysts and designers, and 2) Passive domains, which consist of WordNet databases and e-commerce platforms.

The results of the study indicate that the framework used is able to provide information regarding the tendency of customer sentiment on certain product features, as well as the causes of the assessment, through a visualization of the final results. The cause of the assessment is given by using pairs of words worth positive and negative sentiments for a particular feature. The performance of sentiment analysis used in this study has an accuracy of 75.89%, precision of 78.33%, recall of 89.1% and F1-score of 83.37%.

Keywords: Aspect-Based Sentiment Analysis, Identification Customer Needs, Online Review, Product Feature Identification, Sentiment Analysis, Unsupervised Learning, Voice of Customer, Word Knowledge