

INTISARI

Kualitas suara merupakan salah satu faktor yang penting dalam mendukung *image* positif dari suatu kendaraan. Penelitian sebelumnya telah mengumpulkan dan mempersiapkan signal suara dari 5 fungsi dalam mobil (*indicator, door warning, horn, parking sensor, dan reverse gear shift*) dari 11 merek mobil. *Pair comparison* dan uji *semantic differential rating* telah dilakukan pada studi sebelumnya. Empat responden dihapus karena adanya kesalahan berulang yang dilakukan. Dalam rangka memperdalam peneliti sebelumnya, maka penelitian ini bertujuan untuk membangun model subjektif dan objektif dalam kemampuan manusia menilai kualitas suara dari mobil.

Uji *semantic differential rating scale* menggunakan sebelas pasang kata sifat yang dapat menjelaskan 5 atribut dari suara mobil seperti kualitas suara, *pitch, timbre, loudness, dan tempo*. Penelitian ini menggunakan fitur fisik dari suara yaitu frekuensi dominan, *brightness, spectral centroid, loudness, dan loudness level* untuk menganalisis tingkat preferensi manusia terhadap kualitas suara interior mobil. *Structural equation modeling* digunakan untuk menginvestigasi hubungan antara semantic rating scale dengan kualitas suara dari mobil.

Hasil dari penelitian ini menunjukkan bahwa kata sifat semantic “*undesirable-desirable*”, “*cheap-luxurious*”, dan “*annoying-pleasant*” mempunyai hubungan yang kuat dan signifikan terhadap kualitas suara. *Timbre* memiliki hubungan yang positif sedangkan *loudness* memiliki hubungan negatif dengan kualitas suara. Untuk *horn, pitch* mempunyai hubungan yang signifikan terhadap kualitas suara, untuk *parking sensor, loudness dan tempo* yang memiliki hubungan yang signifikan. Pada *door warning dan reverse gear shift, timbre dan loudness* memiliki hubungan yang signifikan terhadap kualitas suara dan pada *indicator, tempo* yang memiliki hubungan yang signifikan terhadap kualitas suara interior mobil.

Kata Kunci: sinyal suara, *semantic differential rating, structural equation modeling* (SEM)

ABSTRACT

Acoustic quality is one of the important factors to support the positive image of an automobile. The previous study collected and edited sound signals of five functions (indicator, door warning, horn, parking sensor, and reverse gear shift) from 11 car brand names. In that experiment, twenty-one experienced drivers took part in this experiment. A pair comparison test and a semantic differential rating scale test were performed in previous study. Four participants were excluded from further analysis because of their significant circular errors. In order to enhance the previous study, this study aims to develop the subjective and objective model using semantic rating and physical features in sound.

The semantic rating scale test used 11 pairs of adjectives developed from five major attributes of sound including quality, loudness, pitch, timbre, and tempo. This current study used physical properties, e.g., dominant frequency, brightness, spectral centroid, sharpness, loudness, and loudness level in order to were also collected and analyzed in order to explain why certain sound signal were preferred over the others. Structural equation modeling was applied to examine relationship among semantic rating scales of sound of quality in each function of car.

The results indicated that semantic ratings of undesirable-desirable, unsuitable-suitable, cheap-luxurious, and annoying-pleasant had relatively high loadings on sound of quality dimension. Timbre was positively related to sound of quality while loudness was negatively related to sound of quality in most model in subjective evaluation model. In horn, pitch was significantly related to quality in objective model. In parking sensor, loudness and tempo were significantly related to sound of quality. In door warning, timbre and loudness were significantly related to sound of quality. In reverse gear shift, timbre and loudness were significantly related to sound of quality. Finally in indicator, tempo was significantly related to sound of quality.

Keywords: auditory signals, semantic differential rating, structural equation modeling (SEM)