**A multivariate analysis of attribute importance for technically complex products using regression analysis of publicly available data[[1]](#footnote-1)**

The problem of choosing a set of technical, aesthetic and price characteristics of technically complex products remains open and requires the creation of demand and satisfaction models that allow predicting how certain qualities of a product will be perceived by a dynamically developing market at a particular point in time. This requires reliable and timely assessments of how various factors affect customer satisfaction and sales themselves, while considering how costly each feature’s implementation is and how it impacts the product’s market price.

The use of survey data is usually not enough, due to the subjectivity of the declared estimates and the hypothetical nature of the scenarios used, and it is necessary to extract knowledge from data on real purchases. At the same time, the data on real sales of specific models of technically complex products are not widely disclosed. Not accidentally, there are practically no studies of the demand for the characteristics of digital devices. Hedonic studies linking price to product features are widely used in the literature but are not accompanied by the analysis of these features’ impact on other managerial aspects, such as sales and buyer’s satisfaction.

The present study proposes a multivariate approach based on simultaneous estimation of price, sales and satisfaction rating regressions that are aimed to provide decision-making support for manufacturers of digital devices. The approach sheds light on the driving forces of sales, prices, and satisfaction, and provides practitioners and researchers with a set of tools for regular monitoring of consumer preferences based on large amounts of open data.

The author develops a series of multifactor models to support making informed decisions regarding the development of new or modifications of old models of digital devices using laptops as an example. Based on the efficient use of freely available data from a marketplace, the following regression models are developed and estimated simultaneously:

1. A demand model, designed to identify the technical, aesthetic and price determinants of why the demand for some models of digital technology is higher than for others.
2. A model of hedonic pricing, designed to identify the characteristics that give the greatest increase in the price of the product.
3. A satisfaction model of how the average product rating depends on the technical, aesthetic and price characteristics of the product.

The analysis of model coefficients and their significance allows detecting product features that positively impact sales and satisfaction, while being cost-efficient (result in a price premium exceeding the marginal cost of their implementation).

1. The research was supported by Russian Science Foundation (project No. 21-78-00100, <https://rscf.ru/project/21-78-00100/>) [↑](#footnote-ref-1)