TOPICS ON STATISTICAL APPLICATIONS IN BUSINESS AND INDUSTRY

ORGANIZER: VICTOR LEIVA UNIVERSIDAD ADOLFO IBÁÑEZ, CHILE

TALK 1: A NEW DIRECTION OF ATTRIBUTE CONTROL CHARTS FOR PRODUCT DURATION

SPEAKER: VICTOR LEIVA, UNIVERSIDAD ADOLFO IBÁÑEZ, CHILE

We discuss a criterion for quality monitoring based on attribute control charts. The duration of product items to be monitored follows a life distribution. To establish the conforming attribute, a threshold according to a percentile of the life distribution is considered. The control coefficient and the minimum inspection duration for this criterion are determined to yield the specified in-control average run length, whereas the out-of-control case is obtained according to a shift in the target duration mean. An application with lifetime data is provided to validate it, with emphasis in the Birnbaum-Saunders distribution

TALK 2: BIRNBAUM-SAUNDERS CAPABILITY INDICES FOR INDUSTRIAL PROCESSES

SPEAKER: CAROLINA MARCHANT, UNIVERSIDADE FEDERAL DE PERNAMBUCO, BRAZIL

Process capability indices are widely used by industries to determine the quality of their processes. We discuss a methodology based on capability indices for processes whose quality characteristics follow a Birnbaum-Saunders distribution. Maximum likelihood, bootstrapping and Monte Carlo methods are considered to solve some issue related to the methodology. Applications with industrial data are carried out to illustrate its potential.

TALK 3: AN OPTIMIZED METHODOLOGY WITH DEPENDENT DEMAND FOR FOOD INDUSTRY

SPEAKER: FERNANDO ROJAS, UNIVERSIDAD DE VALPARISO, CHILE

We discuss a methodology for supply of components in a food service. The components form the inventory assortment of the service through of which a food menu is produced. The methodology optimizes contribution margins of the service modeling the demand for components. The model considers that the demands for components are correlated. Autoregressive integrated moving average with covariates models are considered to forecast these demands. Maximization of contribution margins of the food service is carried out by minimizing involved buy, store and order costs with an inventory model. A "assemble to-order" system is applied to a Chilean food service. Results from a real-world study based on this methodology are analyzed.

TALK 4: BIRNBAUM-SAUNDERS CONTROL CHARTS APPLIED TO PHARMACEUTICAL INDUSTRY

SPEAKER: JUAN A. VEGA, UNIVERSIDAD DE TARAPACÁ, CHILE

Quality is essential to ensure the effectiveness and safety of pharmaceutical products for health care. In monitoring of pharmaceutical manufacturing processes, control charts are often used. Limits of these charts were proposed for processes whose quality characteristics are normally distributed. However, the normal distribution does always not fit data collected for these characteristics well, mainly due to their positive skewness. We discuss control charts based on the Birnbaum-Saunders distribution and apply them to pharmaceutical data. A comparison with the traditional methodology assuming a normal distribution and considering other non-normal distributions is made.