

STATISTICS IN TRANSITION new series, Winter2014  
Vol. 15, No. 1, pp. 171–173

## BOOK REVIEW

**Jerzy Witold Wiśniewski:** *Correlation and regression of economic qualitative features*, Lambert Academic Publishing, 2013, ISBN 9783659512780, 72 pp., EUR 16, 26.

by Jan Kordos<sup>1</sup>

The purpose of this book is to present research methods suitable for qualitatively characterized phenomena, along with illustrations of their applications. The book consists of an introduction, four chapters, a summary and a bibliography.

The first chapter, *The specificity of the economic measurement*, starts with the concepts of measurement, metrology, economic metrology and the measurement scales.

The second chapter, *The features and quality processes in economics*, is devoted to the specificity of the qualitative characteristics, measurement by weak scales, arithmetic operations on numbers in a variety of scales, notes on the measurement of economic values, and transformation of the measurement results.

The third chapter, *Correlation of features and quality processes*, deals with the nature of correlation coefficients, correlation of the dummy variables, and the coefficient of association attributes.

The last, fourth chapter, *The regression model in the analysis of the attributes and quality processes*, analyses the nature of the regression model, a linear function of the probability, and models with transformed limited variables.

In brief, the following topics are covered:

- 1) simple methods of measurement of the quality features based on the weak Stevens scales;
- 2) common errors in the application of the statistical methods for the analysis of the results of the measurement in ordinal scale which have not been presented in any book before;
- 3) the risk of applying the well-known Spearman's correlation coefficient;
- 4) a new coefficient of association of quality features developed by the book's author which is equivalent to Pearson's correlation coefficient (this coefficient of association presented in the book can be tested, for instance, by a simple t-Student test);

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- 5) the possibilities of applying the association coefficient which can be used to management decisions in an enterprise;
- 6) the possibilities of applying the linear probability function in an enterprise with advantages of its application;
- 7) the econometric models of limited dependent variables with general formula for logit transformation and possible applications in managerial decision-making at an enterprise.

The author considers shortly metrology, economic metrology, and the features and quality processes in economics. Metrology is the science of measurement and includes all theoretical and practical aspects of the measurement. I would like to add for considerations the philosophy of statistical thinking.<sup>2</sup>

**Statistical thinking** is the philosophy of learning and action based on the following fundamental principles:

- a) all work occurs in a system of interconnected processes - a process being a chain of activities that turns inputs into outputs;
- b) variation, which gives rise to uncertainty, exists in all processes; and
- c) understanding and reducing variation are keys to success.

All three principles work together to create the power of statistical thinking.

Since the 1980s statistical thinking has been discussed in the literature, applied in the workplace, and formally taught at some university.<sup>3</sup> While there has been some resistance from those who prefer a more traditional, mathematically oriented approach, the profession has gradually accepted the need for readers to think deeply before calculating.

The definition highlights several key components: process thinking, understanding and managing uncertainty, and using data whenever possible to guide actions and improve decision-making. Statistical thinking is a philosophy of an overall approach to improvement and, therefore, more broadly applicable than statistical methods. It is a way of thinking, behaving, working, taking action and interacting with others. In addition, the focus of the statistical thinking process provides the context and the relevancy for broader and more effective use of statistical methods<sup>4</sup>.

<sup>2</sup> See: <http://www.statoo.com/en/statistical.thinking>; eKPIsolutions; email: eu@ekpisolutions.com; <http://www.asq.org>.

<sup>3</sup> Hoerl, R. and Snee, R. D., (2012). *Statistical Thinking: Improving Business Performance*, New York: Wiley & Sons; Wild C. J. and Pfannkuch, M. (1999), *Statistical Thinking in Empirical Enquiry*, International Statistical Review, 67, 223–265.

<sup>4</sup> Abert, J., Ruud, H., (2007), *Statistical thinking in Sports*, Publisher Chapman & Hall/CRC; Britz G. C., Emerling, D. W., Hare, L. B., Hoerl, R. W., Janis, S. J., (2000). *Improving Performance Through Statistical Thinking*, ASQ Quality Press; Snee, R. D. (1990). *Statistical Thinking and its contribution to Total Quality*, Am. Statist. 44, 116-121; Yu-Kang Tu, (2012). *Statistical Thinking in Epidemiology*, Chapman and Hall/CRC.

Statistical thinking uses the scientific method to develop subject matter knowledge and to gather data to evaluate and revise hypotheses. First, statistical thinking recognizes that results are produced by a process and that the process must be understood and developed to improve the results. The second difference is the emphasis on variation on statistical thinking. The scientific method can be applied without any awareness of the concept of variation, which may lead to misinterpretation of the results. The key similarities are that they both are sequential approaches that integrate data and subject matter knowledge.

