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IN MEMORY OF PROFESSOR PEKKA KORHONEN

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ABSTRACT. This short paper is a tribute to Professor Pekka Korhonen, one of the world's foremost scientists and researchers in Statistics, Operations Research and Decision Making.

1. Introduction

January 24, 2025, was the one-year anniversary of the passing of Professor Pekka Korhonen, a distinguished professor of statistics. He was a professor emeritus at the Department of Information and Service Management at Aalto University in Finland and passed away at the age of 79. Korhonen was one of the world's leading researchers in multi-criteria decision-making, data analysis, and business analytics, having developed world-class techniques and algorithms in these fields.

Multi-criteria decision-making is an interdisciplinary subject, and its effects can be seen in various fields, including applied mathematics, management, operations research, optimization, computer science, engineering, social sciences, and psychology. The main goal of multi-criteria decision-making, in simple terms, is to choose the best alternative (make the best decision) from several available alternatives, considering several criteria, often in conflict with each other. A multi-criteria decision problem can be continuous or discrete. The continuous version of these problems leads to multi-objective optimization, which is another field of optimization and operations research.

Keywords: Pekka Korhonen, Decision Making, Operations Research.

Article Type: Short Paper.

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This short paper is dedicated to the memory of Professor Korhonen and his remarkable scientific journey.

2. Pekka Korhonen

According to [1], Pekka Korhonen was born in Kuopio, Finland, on November 26, 1944. At the time of Pekka's birth, Finland had just emerged from the war and was a poor country; his family was also poor [1]. Although families were large at the time and there were many children and friends to play with, children did not receive a proper level of education. As mentioned in [1], none of his childhood friends, except Pekka, went to university. Comparing the current situation of Finland, as one of the most prosperous countries in the world with the highest level of education, while only a few decades have passed since those not-so-bright days, has important messages and should be taken into account.

Pekka Korhonen completed his bachelor's and master's degrees in mathematics at the University of Helsinki, and then worked at the University's Computing Center. He also completed his PhD in computational statistics at the University of Helsinki in 1978, with a thesis entitled "A Stepwise Procedure for Multivariate Clustering". Korhonen joined the Helsinki School of Economics (HSE) in 1979 and was appointed Professor of Statistics in 1988. He retired from this position in 2012 but remained active in research until recently.

While finishing his PhD, and influenced by his friendship with Professor Jyrki Wallenius [2], another world-class researcher in multi-criteria decision-making, Pekka Korhonen focused his research on multi-objective optimization, multi-criteria decision-making, operations research, and later on data envelopment analysis. Although Professor Korhonen's creativity and the impact of all his research on researchers active in his fields of work are quite obvious, some of his works are particularly prominent. Some of his most influential works deal with how to navigate the Pareto-optimal frontier and obtain a good approximation of the solution set of a multi-criteria problem using interactive human-machine methods. Another important work that can be mentioned is the work of Pekka and his colleagues in the field connecting behavioral and decision sciences/optimization. Value efficiency, and the very strong and interesting mathematical theory supporting it, is another fundamental work of Pekka Korhonen and his colleagues. Pekka and his colleagues have also done very important research in the field of data envelopment analysis [3].

Pekka Korhonen received the Cantor Prize from the International Society on Multiple Criteria Decision Making in 1994. He later became the president of the society, serving in this position from 1996 to 2000.

I first met Pekka in the summer of 2009 at the Helsinki School of Economics (in the Chydenia building). Pekka had a remarkable ability for combining scientific seriousness with an innate sense of humor, and this was evident in our unforgettable first meeting. Our meeting lasted about an hour

and a half. After some initial pleasantries and general dialogue, we discussed in detail the role of generalized concave functions in calculating value efficiency. During that trip and subsequent trips to Helsinki, we had extensive discussions with him and Professor Wallenius, obtained results in this area, and published joint papers on this and other topics [3]. My first research trip to Finland lasted about 45 days and paved the way for many more trips, meetings with Korhonen and Wallenius at scientific events in other parts of the world, and several joint research projects. One of the most memorable memories of working with Pekka was his fondness for short meetings in cafes near the university. When I look back at some of our joint papers, the small café opposite the Chydenia building on the beautiful Runeberginkatu in Helsinki comes to mind, along with a wealth of interesting memories.

My last joint research work with Pekka Korhonen and Jyrki Wallenius was on the connections between multiple-objective programming and weight restricted data envelopment analysis [4]. The initial version of the work was prepared and submitted to EJOR during Pekka's lifetime, but we lost him before receiving the final acceptance and publication.

Summer of 2024 was my last trip to Finland; at the invitation of Aalto University, I gave a lecture in memory of Pekka Korhonen. In addition to researchers from Finland, five speakers from the United States, Canada, the United Kingdom, and Iran were invited to speak at this important event, and they spoke about Pekka's work and his outstanding role in the scientific fields mentioned above [5]. My talk was about preference information in data analysis and decision making, with an emphasis on the work of Professor Korhonen. It was an opportunity to meet again with old friends, Jyrki Wallenius, his family, and the family of Pekka Korhonen, and to remember Pekka's efforts, services, and the great influence he had on our scientific life.



FIGURE 1. HSE, Helsinki, 2009; From left to right: M. Koksalan, J. Wallenius, M. Soleimani-damaneh, and P. Korhonen.



FIGURE 2. University of Tehran, 2013, Pekka Korhonen retirement celebration.



FIGURE 3. The historical city Shiraz, 2013; From left to right: P. Korhonen, Kaiju Haanpää-Korhonen (Pekka's wife), and R. P. Hämäläinen.

3. Closing point

Professor Korhonen and his wife traveled to Iran twice. He was an invited speaker at the ORO2011 and ORO2013 conferences, at the IPM and the University of Tehran, respectively [6, 7]. He had significant contacts with Iranian researchers. At least five Iranian researchers, including Dr. Nasim Nasrabadi (University of Birjand), Dr. Akram Dehnokhalaji (Aston University, UK), Dr. Abolfazl Keshvari (resident in the US), Dr. Nasim Dehghan (resident in the US), and the author of this article (University of Tehran), benefited from educational and research cooperation with him. We have all met many times on different occasions, and have remembered Pekka's humor combined with scientific seriousness, his impact on our scientific lives, and good days we had with him, which were full of



beautiful memories; See Figures 1, 2 and 3 (Figures 2 and 3 have undergone a minor edits). *May his soul rest in peace.*

4. Acknowledgement

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