









Non-Ergodic Theory vs. Fractal Geometry in Organizational Learning and Dynamic Skills at a Healthcare Food Catering Service

Rui Lima^{1,2,3} , Goretí Marreiros⁴ , Florentino Fdez-Riverola^{1,2} ,
Henrique Vicente^{5,6} , and José Neves^{3,6}  

¹ CINBIO, Universidade de Vigo, Department of Computer Science, ESEI – Escuela Superior de Ingeniería Informática, 32004 Ourense, Spain

rui.lima@cespu.pt, riverola@uvigo.es

² SING Research Group, Galicia Sur Health Research Institute (IIS Galicia Sur), SERGAS-UVIGO, Vigo, Spain

³ Instituto Politécnico de Saúde do Norte, CESPU, Famalicão, Paredes, Portugal
jneves@di.uminho.pt

⁴ Departamento de Engenharia Informática, Instituto Superior de Engenharia do Porto, Porto, Portugal

goretidei.isep.ipp.pt

⁵ Departamento de Química e Bioquímica, Escola de Ciências e Tecnologia, REQUIMTE/LAQV, Universidade de Évora, Évora, Portugal

hvicente@uevora.pt

⁶ Centro Algoritmi/LASI, Universidade do Minho, Braga, Portugal

Abstract. This paper examines the adoption of non-Ergodic Theory and Fractal Geometry to enhance organizational learning in healthcare food catering. It critiques conventional linear models, promoting an understanding of varied learning processes across organizational strata. Non-Ergodic Theory emphasizes the diversity of learning among individuals and groups, while Fractal Geometry examines learning as self-similar patterns at multiple scales. This work analyses how employee diversity, knowledge sharing, and cross-level collaboration contribute to a fractal learning environment that supports adaptability and innovation. Findings indicate that implementing these theoretical models can enhance service delivery and customer approval by promoting a culture of relentless education and creative ideas. For managers and practitioners, this study provides a blueprint for enhancing learning processes that can lead to greater efficiency and performance in healthcare food services, suggesting a strategic embrace of employee diversity and interconnected learning patterns for long-term organizational success.

Keywords: Non-Ergodic Theory · Fractal Geometry · Healthcare Food Catering Services · Heterogeneity · Service Quality · Performance · Efficiency · Customer Satisfaction