

**CHAIN OF THE DISPARITY MEASURES:
PROPERTIES, RELATIONS AND COMPARISONS**

PRAPHULL CHHABRA

ABSTRACT. In this article, six distinctive chain of the disparity (divergence or dissimilarity) measures have been propelled, each of which is containing infinite elements. Further, properties and a few relations (intra and connect both) of these measures with other chains have too been assessed. Graphical comparison is additionally done for way better understanding.

REFERENCES

- [1] M. Abdel-Basset and M. Mohamed: *A novel and powerful framework based on neutrosophic sets to aid patients with cancer*, Future Generation Computer Syst., **98**(2019), 144-153.
- [2] S.M. Ali and S.D. Silvey: *A general class of coefficients of divergence of one distribution from another*, J. R. Stat. Soc. Ser. B. Stat. Methodol., **28**(1966), No. 1, 131-142.
- [3] Miguel A. Ré and Rajeev K. Azad: *Generalization of entropy based divergence measures for symbolic sequence analysis*, PLoS One, **9**(2014), Nr. 4, e93532.
- [4] C. Carlos Granero-Belinchn, S.G. Roux and N.B. Garnier: *Kullback-Leibler divergence measure of intermittency: Application to turbulence*, Phys. Rev. E, **97**(2018), No. 1, Art. No. 013107.
- [5] I. Csiszár: *Information type measures of divergences of probability distribution and indirect observations*, Studia Sci. Math. Hungar., **2**(1967), 229-318.
- [6] S. Gahlot and R.N. Saraswat: *A new fuzzy information inequalities and its applications in establishing relation among fuzzy f-divergence measures*, Tamkang J. Math., **53**(2022), No. 2, 109-126.
- [7] H. Garg: *Multi-criteria decision making method based on prioritized Muirhead mean aggregation operator under neutrosophic set environment*, Symmetry, **10**(2018), No. 7, Art. No. 280, 25 pages.
- [8] T. Gkelsinis and A. Karagrigoriou: *Theoretical aspects on measures of directed information with simulations*, Mathematics, **8**(2020), No. 4, Art. No. 587, 13 pages.
- [9] K.C. Hung and H.W. Tuan: *Medical diagnosis based on intuitionistic fuzzy sets revisited*, J. Interdiscip. Math., **16**(2013), No. 6, 385-395.
- [10] K.C. Jain and P. Chhabra: *New series of information divergence measures and their properties*, Appl. Math. Inf. Sci., **10**(2016), No. 4, 1433-1446.
- [11] K.C. Jain and P. Chhabra: *Series of new information divergences, properties and corresponding series of metric spaces*, Int. J. Innovative Res. Sci. Eng. Technology, **3**(2014), No. 5, 12124-12132.
- [12] K.C. Jain and A. Srivastava: *On symmetric information divergence measures of Csiszar's f-divergence class*, J. Appl. Math. Stat. Inform., **3**(2007), No. 1, 85-102.
- [13] R. Joshi and S. Kumar: *An exponential Jensen fuzzy divergence measure with applications in multiple attribute decision-making*, Math. Probl. Eng., **2018**(2018), Article ID 4342098, 9 pages.
- [14] R. Kadian and S. Kumar: *Renyis-Tsallis fuzzy divergence measure and its applications to pattern recognition and fault detection*, J. Intell. Fuzzy Syst., **39**(2020), No. 1, 731-752.

Received: October 22, 2022. *Revised:* January 18, 2023.

2010 Mathematics Subject Classification: 94A17, 26D15.

Key words and phrases: Normalized convex functions, Csiszar's disparity measure, new chains of the disparity measures, intra and inter relations, graphic comparison.

- [15] P. Kafka, F. Österreicher and I. Vincze: *On powers of f -divergence defining a distance*, Studia Sci. Math. Hungar., **26**(1991), 415-422.
- [16] A. Umar and R.N. Saraswat: *Novel divergence measure under neutrosophic environment and its utility in various problems of decision making*, Int. J. Fuzzy Syst. Appl., **9**(2020), No. 4, 82-104.
- [17] I. Vajda: *On the f -divergence and singularity of probability measures*, Period. Math. Hungar., **2**(1972), 223-234.

University of Engineering and Management
Faculty of Applied Sciences
Department of Mathematics and Statistics
Jaipur – 303807 (Rajasthan), India
E-mail address: praphull.chhabra@uem.edu.in