

Stoyan Tranev

OPTIMAL FRANCHISE DECISIONS
WITH APPLICATION OF INTUITIONISTIC
FUZZY LOGIC



4 93890

519.81.005

The study is prepared by a project of the University "Prof. Dr. Assen Zlatarov" No. NIH-486/2023 "Modeling Management Decisions with New Analysis Tools in a Fuzzy Environment".

БИБЛИОТЕКА - УНСС

ИНВ. №



120000134321

ISBN 978-619-245-495-1

© Stoyan Tranev Tranev, author, 2024

© Prof. Marin Drinov Publishing House of Bulgarian Academy of Sciences

УНСС

СОФИЯ

Contents

1	Introduction to IFIMs and Fuzzy logic	11
1.1	Basic Definitions of Intuitionistic fuzzy pairs	12
1.2	Basic Types Intuitionistic Fuzzy Index Matrices	21
1.3	Some Basic Operations over Intuitionistic Fuzzy Index Matrices	26
1.4	Conclusion	39
2	IF Franchise Selection	41
2.1	Introduction	41
2.2	Essence and Characteristics of Franchising	43
2.3	Conflictology of Franchising	47
2.4	Types of Franchise Contradictions	49
2.5	Franchising Conflicts - Manifestation of Contradictions	53
2.6	Franchise Conflicts—A Manifestation of Contradictions	56
2.7	Franchise Conflict Management: Practical Approaches	58
2.8	Literature review: Fuzzy and Intuitionistic Fuzzy Optimal Franchising Problems	60
2.9	An Intuitionistic Fuzzy Index-Matrix Model for Selection of a Franchisee	65
2.10	An Optimal Temporal Intuitionistic Fuzzy Algorithm for Selection of the most Eligible Franchisee (OTIFAFr)	68

2.11	A Model for the Selection of a Franchisor Using a Circular Intuitionistic Fuzzy Index-Matrix	74
2.12	An Elliptic Intuitionistic Fuzzy Method for Selecting the Most Beneficial Franchisor (E-IFFr)	79
2.13	A Confidence Interval Elliptic Intuitionistic Fuzzy Approach to Determine the Most Advantageous Franchisor (CIE-IFFr)	85
2.14	Conclusion	94
3	Exploring IF Franchise Models Through Case Studies	97
3.1	Introduction	97
3.2	IF Franchise Selection	98
3.3	An Application of OTIFAFr to the Largest Fast Food Restaurant Chain in Bulgaria	101
3.4	A Practical Framework for Fast-Food Restaurant Chains for the Franchisee Selection Process	103
3.5	Using C-IFFr to solve the challenge of choosing a franchise chain gas station	108
3.6	Using E-IFFr Approach to Overcome the Difficulty of Selecting a Courier Franchise Company	111
3.7	CIE-IFFr Approach in the Optimal Selection of the Most Suitable Franchisor in the Courier Business	117
3.8	Conclusion	122