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The Role of Triangular Fuzzy Neutrosophic Set-Based QUALIFLEX in Enhancing University Dance Instruction Assessment

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Abstract

The evaluation of university dance teaching quality involves a multi-dimensional approach, including the achievement of teaching objectives, the scientific and innovative nature of course content, the diversity of teaching methods, instructors' professional competence, and students' participation and progress. It uses both quantitative and qualitative analysis, incorporating student feedback and classroom observation to ensure comprehensive assessment. Continuously optimizing teaching strategies, enhances students' artistic literacy and overall abilities, supporting the development of high-level dance talent. The college dance teaching quality evaluation is multiple-attribute decision-making (MADM). Recently, the QUALIFLEX method has been established to cope with MADM issues. The triangular fuzzy neutrosophic sets (TFNSs) are established as a tool for characterizing uncertain data during the college dance teaching quality evaluation. In this study, the triangular fuzzy neutrosophic number QUALIFLEX (TFNN-QUALIFLEX) method is established to solve the MADM under TFNSs. Finally, a numerical case study on college dance teaching quality evaluation is provided to validate the proposed method.

Keywords: MADM; TFNSs; QUALIFLEX approach; quality evaluation; neutrosophic sets

1. Introduction

The evaluation of university dance teaching quality is a multi-dimensional process aimed at enhancing educational outcomes and students' overall development. Firstly, it assesses the achievement of teaching objectives, including students' mastery of dance skills and theoretical knowledge, through performances and exams. Secondly, the innovation of course content is crucial. Courses should be updated to reflect the latest dance trends and technologies, inspiring creativity and critical thinking. The diversity of teaching methods is also an important indicator. Teachers should use varied strategies, such as lectures, demonstrations, and interactive practices, to cater to different learning styles, enhancing engagement and learning outcomes. The professional competence and teaching level of instructors directly affect quality, and regular training and

feedback mechanisms can improve their skills. Student participation and progress are evaluated by observing classroom performance and activity involvement, focusing on their growth in technique, artistic expression, and teamwork. By combining quantitative and qualitative analysis, and utilizing student feedback and teaching outcome analysis, the evaluation identifies strengths and weaknesses to optimize teaching strategies. This systematic evaluation not only improves teaching quality but also promotes students' overall development, supporting the cultivation of high-level dance talent. In modern college dance teaching quality evaluation, performance evaluation often employs MADM methods such as TODIM [1]and VIKOR [2]. These methods can comprehensively consider multiple evaluation criteria and conduct multidimensional analysis, providing a thorough performance assessment [3, 4]. Additionally, due to the inherent uncertainty and fuzziness in project management data, tools such as Fuzzy Sets and Neutrosophic Sets are widely used. These tools effectively handle uncertain and fuzzy data, enhancing the accuracy and reliability of the evaluation results [5-7]. The college dance teaching quality evaluation is MADM. Recently, the QUALIFLEX method [8, 9,10] has been developed to address multi-attribute decision-making (MADM) problems. To handle uncertain information in college dance teaching quality evaluation, TFNSs [11] have been introduced as a tool for characterizing such uncertainties in light of neutrosophic sets[12-15]. In this paper, the TFNN- QUALIFLEX method is proposed to solve MADM issues in the context of TFNSs. Finally, a numerical case study is presented to validate the effectiveness of the proposed approach in evaluating the efficiency of resource allocation in university innovation and entrepreneurship education.

Here are the five key points of innovation, including the addition of case and comparative analysis:

- **MADM Framework for Resource Allocation**: The manuscript addresses the college dance teaching quality evaluation as a MADM problem.
- **Integration of QUALIFLEX Method**: The combination of QUALIFLEX and average methods is introduced to handle MADM issues more effectively.
- **Use of TFNSs for Uncertainty Handling**: TFNSs are used to characterize and manage uncertain data during the evaluation process, improving the accuracy of resource allocation assessments.
- **Development of TFNN- QUALIFLEX**: A new method, TFNN- QUALIFLEX, is proposed to solve MADM problems under TFNSs, offering a novel approach to decision-making in uncertain environments.
- **Case Study and Comparative Analysis**: The proposed method is validated through a numerical case study for college dance teaching quality evaluation, and comparative analysis is conducted to demonstrate its effectiveness and advantages over alternative methods.

2. Literature study

The evaluation of university dance teaching quality is a comprehensive process aimed at enhancing teaching standards and students' artistic abilities. Firstly, the evaluation system focuses on achieving teaching objectives by analyzing students' performance in dance skills, theoretical knowledge, and creativity to see if course expectations are met. Secondly, updating and diversifying course content is crucial for improving teaching quality. Courses should incorporate the latest dance trends and technological applications to inspire exploration and innovation, broadening students' artistic perspectives and adaptability. In terms of teaching methods, diverse strategies are a key part of the evaluation. Teachers need to flexibly employ lectures, demonstrations, interactive discussions, and practical exercises to meet the learning needs of different students, enhancing engagement and learning outcomes. The professional development and teaching skills of instructors directly impact quality, and ongoing training and feedback mechanisms can help improve teaching methods. Student participation and progress are important indicators of teaching quality. By observing students' performance in classes and extracurricular activities, their growth in technique, artistic expression, and teamwork is assessed. By combining student feedback, classroom observation, and analysis of teaching outcomes, the evaluation provides a comprehensive understanding of strengths and weaknesses, helping to optimize teaching strategies. Through this systematic evaluation process, university dance teaching not only improves quality but also promotes overall student development, providing a solid foundation for cultivating creative and adaptable dance talent. Over the past decade, research on university dance teaching methods has increased, covering aspects such as new media technology, educational model reform, and teaching quality improvement. The following is a review of 11 related articles, arranged chronologically from past to present. In 2014, Zhao [16] explored the teaching paths of university sports dance courses, emphasizing the role of sports dance in promoting students' physical and mental health. He suggested that the choice of teaching paths should include correcting posture, stimulating interest, and reforming teaching models to improve teaching quality. In 2015, Yang [17] focused on cultivating rhythm awareness in university dance teaching. He highlighted the importance of rhythm awareness in enhancing dance appeal and proposed specific cultivation ideas to help teachers improve students' sense of rhythm. In 2016, Li [18] analyzed the problems in dance teaching at Yunnan University Dianchi College, such as insufficient faculty and inadequate teaching facilities. Through questionnaires and on-site analysis, he proposed improvement measures to enhance teaching quality. In 2017, Wang [19] explored ways to improve the quality of dance teaching for undergraduate preschool education majors. She pointed out the important role of dance education in children's physical and intellectual development and analyzed methods to improve teaching quality. In 2019, Zhang [20] discussed the positioning and reform of dance teaching in comprehensive universities. She believed that dance teaching plays an important role in talent cultivation and proposed reform measures to enhance students' comprehensive quality. In the same year, Xu [21] studied the application of micro-courses in university sports dance teaching. She noted that micro-courses provide students with flexible

learning time arrangements through video teaching, thereby improving teaching quality and learning efficiency. In 2020, Tang and Wu [22] discussed the interpenetration strategy of traditional art protection and campus culture innovation in the Three Gorges Reservoir Area. Using the Music and Dance College of Chongqing Normal University as an example, they analyzed how to achieve the combination of education and heritage through cultural innovation. In 2021, Duan and Hong [23] studied the impact of new media technology on university dance performance teaching. They pointed out that new media technology can enrich teaching methods and improve the problem of teaching content being out of touch with the times, thereby enhancing teaching quality. In 2022, Ge [24] applied goal-oriented theory to study the teaching design of dance courses in senior universities. She proposed specific teaching goals and diversified teaching methods to improve the quality of dance education in senior universities. In 2024, Zhao and Liu [25] explored the application of the "MOOC+flipped classroom" model in university sports dance courses. They found that this model improved students' personalized learning and academic performance, emphasizing the importance of teacher guidance. In the same year, Ma [26] studied the application of micro-video-assisted teaching in the sports dance courses at Yan'an University. She demonstrated through experiments that micro-video-assisted teaching significantly improved students' learning interest and ability, providing a reference for enhancing teaching effectiveness.

3. Preliminaries

This section shows some definitions of the TFNN [28,29] as:

Definition 1. The TFNSs can be presented as:

$$Y = \{(x), T_y(x), I_y(x), F_y(x) | \, x \in X\} \tag{1}$$

$$T_y(x) = \left(T_y^L(x), T_y^M(x), T_y^U(x)\right), 0 \le T_y^L(x) \le T_y^M(x) \le T_y^U(x) \le 1 \tag{2}$$

$$I_y(x) = \left(I_y^L(x), I_y^M(x), I_y^U(x)\right), 0 \le I_y^L(x) \le I_y^M(x) \le I_y^U(x) \le 1 \tag{3}$$

$$F_y(x) = \left(F_y^L(x), F_y^M(x), F_y^U(x)\right), 0 \le F_y^L(x) \le F_y^M(x) \le F_y^U(x) \le 1 \tag{4}$$

The truth membership function can be defined as:

$$T_y(x) = \begin{cases} \frac{x - T_y^L(x)}{T_y^M(x) - T_y^L(x)}, & T_y^L(x) \le x T_y^M(x) \\ \frac{x - T_y^U(x)}{T_y^M(x) - T_y^U(x)}, & T_y^M(x) \le x T_y^U(x) \\ 0, & otherwise \end{cases} \tag{5}$$

Definition 2. Let two TFNNs as:

$$y_1 = \left\{\left(T_{y_1}^L(x), T_{y_1}^M(x), T_{y_1}^U(x)\right), \left(I_{y_1}^L(x), I_{y_1}^M(x), I_{y_1}^U(x)\right), \left(F_{y_1}^L(x), F_{y_1}^M(x), F_{y_1}^U(x)\right)\right\}$$

$$y_2 = \left\{\left(T_{y_2}^L(x), T_{y_2}^M(x), T_{y_2}^U(x)\right), \left(I_{y_2}^L(x), I_{y_2}^M(x), I_{y_2}^U(x)\right), \left(F_{y_2}^L(x), F_{y_2}^M(x), F_{y_2}^U(x)\right)\right\}$$

$$y_1 \oplus y_2 = \left\{ \begin{pmatrix} T_{y_1}^L(x) + T_{y_2}^L(x) - T_{y_1}^L(x)T_{y_2}^L(x), T_{y_1}^M(x) + T_{y_2}^M(x) - \\ T_{y_1}^M(x)T_{y_2}^M(x), T_{y_1}^U(x) + T_{y_2}^U(x) - T_{y_1}^U(x)T_{y_2}^U(x) \end{pmatrix}, \right. \\ \left(I_{y_1}^L(x)I_{y_2}^L(x), I_{y_1}^M(x)I_{y_2}^M(x), I_{y_1}^U(x)I_{y_2}^U(x) \right), \\ \left. \left(F_{y_1}^L(x)F_{y_2}^L(x), F_{y_1}^M(x)F_{y_2}^M(x), F_{y_1}^U(x)F_{y_2}^U(x) \right) \right\} \tag{6}$$

$$y_1 \otimes y_2 = \left\{ \left(T_{y_1}^L(x)T_{y_2}^L(x), T_{y_1}^M(x)T_{y_2}^M(x), T_{y_1}^U(x)T_{y_2}^U(x) \right), \right. \\ \begin{pmatrix} I_{y_1}^L(x) + I_{y_2}^L(x) - I_{y_1}^L(x)I_{y_2}^L(x), I_{y_1}^M(x) + I_{y_2}^M(x) - \\ I_{y_1}^M(x)I_{y_2}^M(x), I_{y_1}^U(x) + I_{y_2}^U(x) - I_{y_1}^U(x)I_{y_2}^U(x) \end{pmatrix}, \\ \left. \begin{matrix} F_{y_1}^L(x) + F_{y_2}^L(x) - F_{y_1}^L(x)F_{y_2}^L(x), F_{y_1}^M(x) + F_{y_2}^M(x) - \\ F_{y_1}^M(x)F_{y_2}^M(x), F_{y_1}^U(x) + F_{y_2}^U(x) - F_{y_1}^U(x)F_{y_2}^U(x) \end{matrix} \right\} \tag{7}$$

Definition 3. The score function can be computed as:

$$S(y) = \frac{1}{12} \begin{bmatrix} 8 + \left(T_y^L(x) + 2T_y^M(x) + T_y^U(x) \right) - \\ \left(I_y^L(x) + 2I_y^M(x) + I_y^U(x) \right) - \\ \left(F_y^L(x) + 2F_y^M(x) + F_y^U(x) \right) \end{bmatrix} \tag{8}$$

4. TFNN- QUALIFLEX Approach

This section provides a clear explanation of the steps involved in the proposed technique.

Step 1: Constructing the Decision Matrix

In this step, the decision-makers use the Triangular Fuzzy Neutrosophic Numbers (TFNN) to assess both the criteria and the alternatives. Once the evaluations are completed, a score function is applied to transform the fuzzy values into crisp numerical values. These crisp values are then aggregated to form a unified decision matrix. Following this, the criteria are calculated using the average method, ensuring a balanced and accurate representation of their relative importance.

Step 2: Generating the Initial Alternative Permutation

After preparing the decision matrix and determining the criteria weights, an initial order or permutation of the alternatives is created. This serves as the foundation for further analysis and ranking in subsequent steps.

The number of permutations is created by $m!$ As:

$Per1 = \{ A1, A2, A3, A4, A5, A6, A7, A8\}$

$Per2 = \{A1, A3, A4, A5, A6, A7, A8, A2\}$

$Per3 = \{A1, A2, A4, A5, A6, A7, A8, A3\}$

$Per4 = \{A1, A2, A3, A5, A6, A7, A8, A4\}$

$Per5 = \{A1, A2, A3, A4, A6, A7, A8, A5\}$

$Per6 = \{A1, A2, A3, A4, A5, A7, A8, A6\}$

$Per7 = \{A1, A2, A3, A4, A5, A6, A8, A7\}$

Step 3: Establishing the Initial Ranking of Alternatives

In this step, the alternatives are arranged in order, from the best to the worst, based on the evaluations provided by the experts. These rankings reflect the collective opinions of the decision-makers and form the groundwork for further analysis. This ensures that each alternative is initially assessed and ranked according to its perceived value or performance.

Step 4: Determining Dominant and Dominated Values

Here, the dominant and dominant values for each alternative are identified. The dominant value represents how strongly an alternative outperforms others, while the dominant value indicates how much it is outperformed by other alternatives. This step helps in understanding the relative strengths and weaknesses of each option within the decision-making framework.

$A1 > A2 = A3$

$Per = \{A2.A1, A3\}$

$A2 < A1 \rightarrow -1$

$A2 = A3 \rightarrow 0$

$A3 < A1 \rightarrow +1$

Step 5: Aggregating the Permutation Values of Criteria

At this stage, the permutation values associated with the criteria are aggregated. This process combines the rankings or weights assigned to each criterion, ensuring a comprehensive evaluation that accounts for the importance of each factor in the decision-making process. The goal is to achieve a unified representation of the criteria's influence.

Step 6: Aggregating the Permutation Values of Alternatives

Once the criteria have been aggregated, the next step is to aggregate the permutation values of the alternatives. This involves combining the evaluations of the alternatives across all criteria into a single set of values. This aggregation helps simplify the comparison and provides a clear overall performance measure for each alternative.

Step 7: Determining the Final Ranking of Alternatives

In the final step, the aggregated values are used to rank the alternatives from the best to the worst. This step concludes the process by providing a definitive order of the alternatives based on their overall performance, enabling the decision-makers to identify the most suitable choice.

5. Case Study and Comparison

This section shows the results of the proposed method. Eight well-known dance colleges are evaluated with 17 attributes:

A. Teaching Effectiveness

The degree to which dance instruction leads to measurable improvements in students' technical skills, artistry, and confidence.

B. Choreographic Skills Development

Opportunities for students to learn and apply choreography techniques, fostering creativity and innovation in dance creation.

C. Technical Proficiency Training

Focus on developing fundamental and advanced dance techniques, including posture, movement precision, and coordination.

D. Performance Skills

The ability to train students to perform confidently and expressively on stage in diverse settings.

E. Individualized Attention

Customization of teaching methods to address the unique strengths, weaknesses, and goals of each student.

F. Engagement and Motivation

Strategies used by instructors to keep students actively involved, inspired, and committed to their craft.

G. Curriculum Design and Relevance

Inclusion of modern and classical dance forms, balanced integration of theory, practice, and interdisciplinary learning.

H. Professional Development Opportunities

Exposure to workshops, masterclasses, and career guidance for students aiming to pursue dance professionally.

I. Assessment and Feedback Quality

Timely, constructive, and specific feedback is provided to students for continuous improvement in their performance.

J. Cultural and Artistic Exposure

Encouraging students to understand and appreciate the historical, cultural, and global contexts of dance.

K. Innovation in Teaching Methods

Use of modern teaching techniques, including multimedia tools and interactive learning

methods, to enhance instruction.

L. Physical Conditioning and Health

Ensuring students develop strength, flexibility, and stamina while promoting practices that prevent injuries.

M. Rehearsal and Practice Management

Structuring and supervising rehearsals effectively to maximize productivity and ensure performance readiness.

N. Collaborative Skills Development

Training students to work cohesively in group performances and learn from peer interactions.

O. Resource and Facility Quality

Availability and adequacy of dance studios, practice spaces, costumes, and other necessary resources.

P. Emotional and Psychological Support

Providing a supportive environment that fosters confidence, resilience, and emotional well-being.

Q. Program Reputation and Community Engagement

The visibility, credibility, and outreach of the college's dance program in the local and broader arts community.

5.1 Example

We have the initial decision matrix with three criteria and three alternatives.

The first decision matrix is formed as follows:

$$\begin{bmatrix} 1.3 & 12 & 3000 \\ 2 & 20 & 1000 \\ 2 & 10 & 2000 \end{bmatrix}$$

The criteria weights are obtained from the decision matrix.

Then the 6 permutations is obtained for instance

$Per1 = A1 > A2 > A3$

$Per2 = A3 > A2 > A1$

$Per3 = A2 > A1 > A3$

The initial raking of alternatives is computed as:

1 2 1
2 1 3
2 3 2

The dominant values

$Per\ 1 = A1 > A2 > A3\ for\ c1$

$A2 < A1 \rightarrow 1$

$A2 = A3 \rightarrow 0$

$A3 = A1 \rightarrow 1$

Then the final rank of alternatives is A1

Table 1. Matrix of Information.

	A_1	A_2	A_3	A_4	A_5	A_6	A_7	A_8
C_1	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)
C_2	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_3	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)
C_4	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)
C_5	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)
C_6	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)
C_7	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)
C_8	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_9	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)
C_{10}	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)
C_{11}	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)
C_{12}	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)
C_{13}	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)
C_{14}	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_{15}	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)
C_{16}	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)
C_{17}	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
	A_1	A_2	A_3	A_4	A_5	A_6	A_7	A_8
C_1	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)
C_2	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_3	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)
C_4	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_5	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)
C_6	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)
C_7	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)
C_8	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_9	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.8,0.5,0.6),(0.3,0.4,0.5)

C_{16}	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)
C_{15}	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_{12}	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)
C_{13}	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)
C_{14}	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_{18}	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)
C_{16}	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)
C_{17}	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
	A_1	A_2	A_3	A_4	A_5	A_6	A_7	A_8
C_1	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)
C_2	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_3	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)
C_4	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)
C_5	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)
C_6	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)
C_7	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)
C_8	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_9	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)
C_{10}	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.4,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)
C_{11}	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)
C_{12}	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)
C_{13}	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)
C_{14}	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.1,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)
C_{15}	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)
C_{16}	(0.2,0.5,0.7),(0.3,0.6,0.8),(0.1,0.2,0.3)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)
C_{17}	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)	(0.3,0.5,0.6),(0.2,0.4,0.5),(0.5,0.6,0.8)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.6,0.8,0.9),(0.2,0.3,0.5),(0.1,0.3,0.4)	(0.5,0.6,0.7),(0.4,0.5,0.6),(0.3,0.4,0.5)	(0.7,0.8,0.9),(0.2,0.3,0.4),(0.2,0.3,0.4)	(0.4,0.7,0.9),(0.5,0.6,0.8),(0.2,0.4,0.6)

Step 1: The process begins with the construction of the decision matrix, as illustrated in Table 1. This matrix captures the performance evaluations of all alternatives against the given criteria. Following this, the criteria weights are calculated to reflect their relative importance in the decision-making process. The methodology for calculating these weights is demonstrated in Figure 1, providing a visual aid to enhance understanding.

Step 2: Next, an initial permutation of the alternatives is created. This involves listing all possible orders or rankings of the alternatives. The total number of permutations is determined by the factorial of the number of alternatives, represented as m! where m is the total number of alternatives. This step sets the stage for subsequent evaluation and analysis.

Per 1 = A1 > A2 > A3 > A4 > A5 > A6 > A7 > A8

Per 2 = A1 > A3 > A4 > A5 > A6 > A7 > A8 > A2

Per 3 = A1 > A2 > A4 > A5 > A6 > A7 > A8 > A3

Per 4 = A1 > A2 > A3 > A5 > A6 > A7 > A8 > A4

Per 5 = A1 > A2 > A3 > A4 > A6 > A7 > A8 > A5

Per 6 = A1 > A2 > A3 > A4 > A5 > A7 > A8 > A6

Per 7 = A1 > A2 > A3 > A4 > A5 > A6 > A8 > A7

Per 8 = A2 > A3 > A4 > A5 > A6 > A7 > A8 > A1

Per 9 = A2 > A4 > A5 > A6 > A7 > A8 > A1 > A3

Per 10 = A2 > A3 > A5 > A6 > A7 > A8 > A1 > A4

Per 11 = A2 > A3 > A4 > A6 > A7 > A8 > A1 > A5

Per 12 = A2 > A3 > A4 > A5 > A7 > A8 > A1 > A6

Per 13 = A2 > A3 > A4 > A5 > A6 > A8 > A1 > A7

Per 14 = A2 > A3 > A4 > A5 > A6 > A7 > A1 > A8

Per 15 = A3 > A4 > A5 > A6 > A7 > A8 > A1 > A2

Per 16 = A3 > A5 > A6 > A7 > A8 > A1 > A2 > A4

Per 17 = A3 > A4 > A6 > A7 > A8 > A1 > A2 > A5

Per 18 = A3 > A4 > A5 > A7 > A8 > A1 > A2 > A6

Per 19 = A3 > A4 > A5 > A6 > A8 > A1 > A2 > A7

Per 20 = A3 > A4 > A5 > A6 > A7 > A1 > A2 > A8

Per 21 = A3 > A4 > A5 > A6 > A7 > A8 > A2 > A1

Per 22 = A4 > A5 > A6 > A7 > A8 > A1 > A2 > A3

Per 23 = A4 > A6 > A7 > A8 > A1 > A2 > A3 > A5

Per 24 = A4 > A5 > A7 > A8 > A1 > A2 > A3 > A6

Per 25 = A4 > A5 > A6 > A8 > A1 > A2 > A3 > A7

Per 26 = A4 > A5 > A6 > A7 > A1 > A2 > A3 > A8

Per 27 = A4 > A5 > A6 > A7 > A8 > A2 > A3 > A1

Per 28 = A4 > A5 > A6 > A7 > A8 > A1 > A3 > A2

Step 3: Create the initial ranking of alternatives based on expert evaluations.

Step 4: Identify the dominant and dominated values for each alternative.

Step 5: Aggregate the permutation values of the criteria.

Step 6: Aggregate the permutation values of the alternatives.

Step 7: Determine the final ranking of the alternatives, as shown in Figure 2.

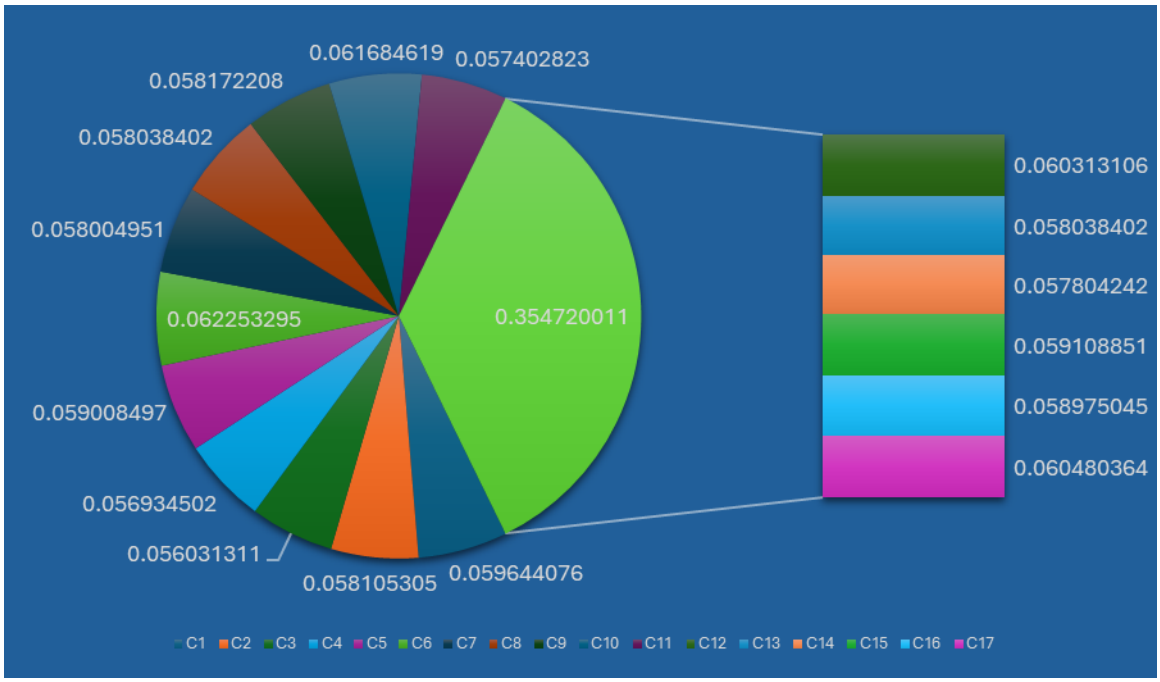

Figure 1. Criteria Weighting

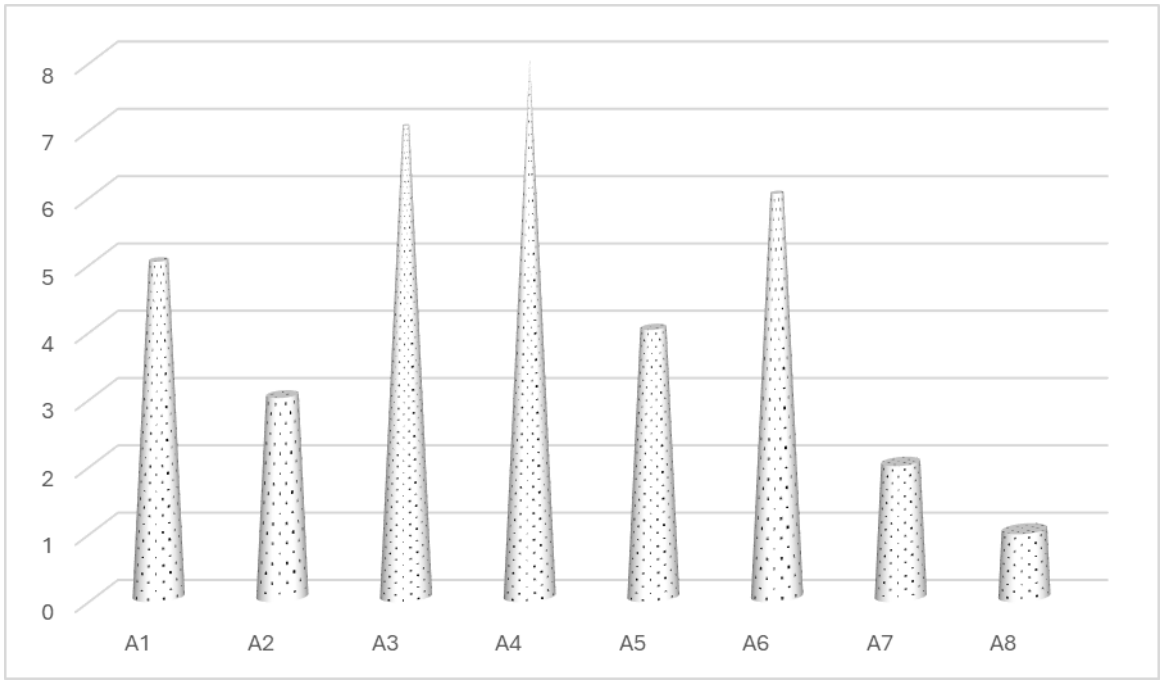

Figure 2. Priority of Alternatives

Evaluating the quality of university dance teaching is a comprehensive process aimed at enhancing educational outcomes and students' artistic literacy. The evaluation system includes several key dimensions:

Firstly, the achievement of teaching objectives is central, ensuring students acquire the necessary

dance skills and theoretical knowledge through clear plans and assessments.

Secondly, the scientific and innovative nature of the course content is crucial. Courses need to be updated regularly to reflect the latest dance trends and techniques while maintaining a balance between theory and practice to inspire creativity.

The diversity of teaching methods is also an important aspect of evaluation. Teachers should employ various strategies, including lectures, demonstrations, interactive sessions, and practical activities, to accommodate different learning styles. This not only increases classroom engagement but also enhances students' understanding and application skills.

The professional competence and teaching level of instructors are core to the evaluation. High-quality teachers can inspire and guide students through their rich professional experience and teaching skills.

Regular training and development programs help maintain a high level of professional expertise among faculty. Student participation and progress are crucial indicators of teaching effectiveness. Evaluating students' growth and progress involves observing their performance in class, showcasing their work, and their involvement in various dance activities.

Additionally, the combination of quantitative and qualitative analysis ensures a comprehensive and objective evaluation. Student feedback, classroom observation, and analysis of teaching outcomes are important tools for identifying strengths and weaknesses in teaching, thereby optimizing strategies. Through this systematic evaluation process, university dance teaching can improve its quality and promote students' overall development, providing strong support for cultivating high-level dance talent with creativity and artistic literacy. The college dance teaching quality evaluation is a MADM issue. We show that alternative 4 is the best and alternative 8 is the worst.

5.2. Comparative analysis

The TFNN-QUALIFLEX approach is compared with the TFNN-VIKOR approach [30], the TFNN-MABAC approach [27], and the TFNN-EDAS approach [31]. The comparative results are established in Figure 3.

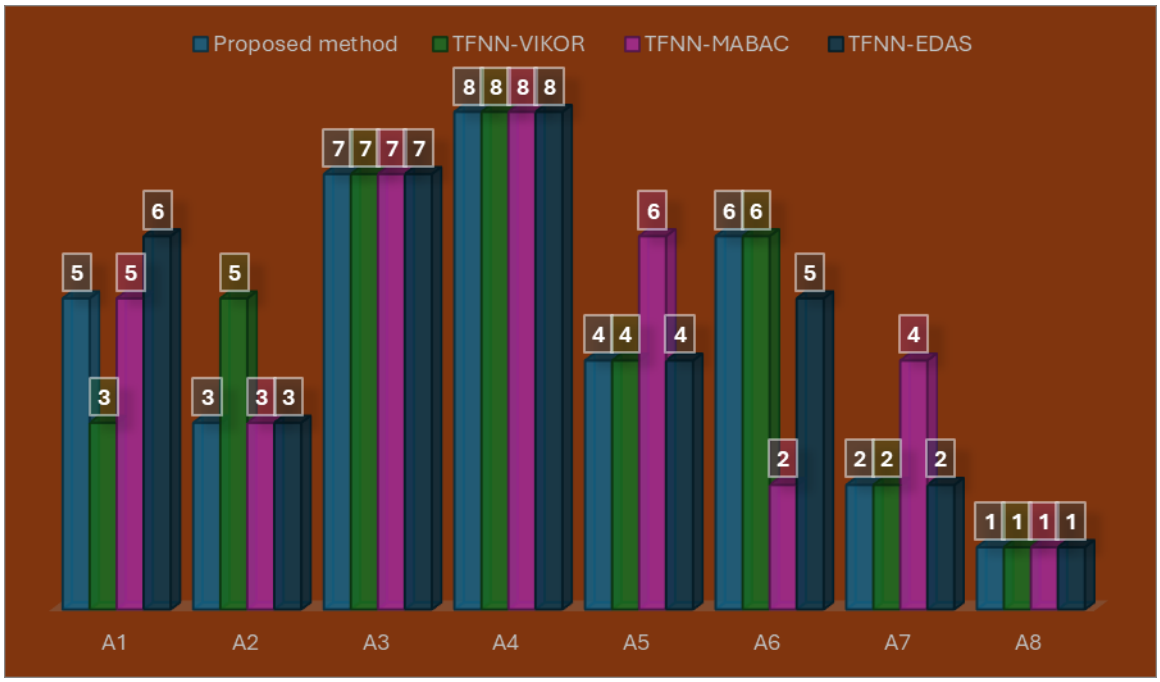

Figure 3. Comparison of Methods

Based on the detailed analysis above, it is evident that all models identify the same optimal locally well-known dance college and the ranking of the eight dance colleges is consistent across the methods. This confirms that the TFNN-QUALIFLEX approach is both reasonable and effective.

When comparing the proposed method with existing approaches, it becomes clear that each method has its strengths and weaknesses in addressing MADM problems. However, the existing methods show certain limitations when applied to complex and uncertain college dance teaching quality evaluations.

The proposed TFNN- QUALIFLEX method offers a robust framework for decision-making, excelling in three key areas: handling uncertainty, accommodating non-linear preferences and risk attitudes, and considering multiple objectives and trade-offs.

- *Stronger Capability in Handling Uncertainty:* The method employs Triangular Fuzzy Neutrosophic Sets (TFNSs) to represent truth-membership, indeterminacy-membership, and falsity-membership. This representation allows for a more comprehensive capture and portrayal of uncertain information. By not only considering the fuzziness inherent in decision-making data but also distinguishing among the three dimensions of truth, uncertainty, and falsity, the method achieves more accurate decisions in highly uncertain environments. This capability is particularly advantageous in complex scenarios where data may be incomplete or ambiguous, providing a structured approach to navigate uncertainty with greater precision.

In summary, the TFNN-QUALIFLEX method enhances decision-making by effectively managing uncertainty and enabling balanced trade-offs among multiple objectives. This approach empowers decision-makers to navigate complex environments with greater confidence and precision, making it a valuable tool for various applications where strategic and informed decisions

are crucial.

6. Conclusion

The evaluation of university dance teaching quality is a multi-dimensional process aimed at enhancing educational outcomes and students' artistic literacy. It covers the achievement of teaching objectives, the scientific and innovative nature of course content, the diversity of teaching methods, instructors' professional competence, and students' participation and progress. By combining quantitative and qualitative analysis, the evaluation system utilizes student feedback, classroom observation, and teaching outcome analysis to comprehensively identify strengths and weaknesses in teaching. Teachers should employ diverse strategies to accommodate different learning styles, increasing engagement and application skills. This systematic evaluation not only optimizes teaching quality but also promotes students' overall development, supporting the cultivation of innovative dance talent. The college dance teaching quality evaluation is a MADM problem. Recently, the QUALIFLEX method has been advanced to tackle MADM challenges. This approach utilizes TFNSs to effectively characterize and manage uncertain data throughout the evaluation process. Building on this foundation, the study introduces a TFNN- QUALIFLEX model specifically designed to address MADM issues within the framework of TFNSs. This innovative model integrates the strengths of TFNSs in handling uncertainty with the capabilities of the QUALIFLEX methods, providing a comprehensive solution for decision-making scenarios where ambiguity and complexity are prevalent. The TFNN- QUALIFLEX model enhances decision-making accuracy by accommodating the nuances of uncertain information and addressing the diverse preferences and risk attitudes of decision-makers. By leveraging the exponential form of the QUALIFLEX method, the model can flexibly adapt to various risk profiles, making it particularly suitable for complex project management environments where multiple objectives and conflicting goals must be balanced. To demonstrate the practical applicability and effectiveness of the proposed method, a numerical case study is conducted. This case study serves as a validation tool, illustrating how the TFNN- QUALIFLEX model can be applied to real-world scenarios, thereby confirming its utility and robustness in solving MADM problems. Through this study, the model proves to be an asset in enhancing decision-making processes, offering a structured approach to navigate uncertainty and complexity with greater precision and confidence.

References

[1] L. Gomes, L.A.D. Rangel, An application of the TODIM method to the multicriteria rental evaluation of residential properties, European Journal of Operational Research, 193 (2009) 204-211.

[2] S. Opricovic, G.H. Tzeng, Compromise solution by MCDM methods: A comparative analysis of VIKOR and TOPSIS, European Journal of Operational Research, 156 (2004) 445-455.

[3] M. Arshad, M. Saeed, A. Ur Rahman, Interval complex single-valued neutrosophic hypersoft set with Application in Decision Making, Neutrosophic Sets and Systems, 60 (2023) 396-419.

[4] A. Kanchana, D. Nagarajan, S. Broumi, Multi-attribute group decision-making based on the

Neutrosophic Bonferroni mean operator, Neutrosophic Sets and Systems, 57 (2023) 139-164.

[5] M. Touqeer, R. Umer, M.N. Ahmad, M. Salimi, A. Ahmadian, Signed distance-based approach for multiple criteria group decision-making with incomplete information using interval type-2 neutrosophic numbers (Jun, 10.1007/s11042-023-15619-z, 2023), Multimedia Tools and Applications, 83 (2024) 8467-8467.

[6] T. Senapati, A. Sarkar, G.Y. Chen, Enhancing healthcare supply chain management through artificial intelligence-driven group decision-making with Sugeno-Weber triangular norms in a dual hesitant q-rung orthopair fuzzy context, Engineering Applications of Artificial Intelligence, 135 (2024) 22.

[7] P.M. Rafi-Ul-Shan, M. Bashiri, M.M. Kamal, S.K. Mangla, B. Tjahjono, An Analysis of Fuzzy Group Decision Making to Adopt Emerging Technologies for Fashion Supply Chain Risk Management, Ieee Transactions on Engineering Management, 71 (2024) 8469-8487.

[8] T.-Y. Chen, "Interval-valued intuitionistic fuzzy QUALIFLEX method with a likelihood-based comparison approach for multiple criteria decision analysis," Inf. Sci. (Ny)., vol. 261, pp. 149–169, 2014.

[9] T.-Y. Chen, C.-H. Chang, and J. R. Lu, "The extended QUALIFLEX method for multiple criteria decision analysis based on interval type-2 fuzzy sets and applications to medical decision making," Eur. J. Oper. Res., vol. 226, no. 3, pp. 615–625, 2013.

[10] A. Alinezhad, J. Khalili, A. Alinezhad, and J. Khalili, "QUALIFLEX method," New methods Appl. Mult. Attrib. Decis. Mak., pp. 41–46, 2019..

[11] P. Biswas, S. Pramanik, B.C. Giri, Aggregation of triangular fuzzy neutrosophic set information and its application to multi-attribute decision making, Neutrosophic sets and systems, 12 (2016) 20-40.

[12] F.A. Smarandache, Unifying Field in Logics. Neutrosophy: Neutrosophic Probability, Set and Logic, American Research Press, Rehoboth, 1999.

[13] H. Wang, F. Smarandache, Y. Zhang, R. Sunderraman, single-valued neutrosophic sets, Multispace and Multistructure, 4 (2010) 410-413.

[14] F. Smarandache, Neutrosophy Transcends Binary Oppositions in Mythology and Folklore, Neutrosophic Sets and Systems, 65 (2024) 55-79.

[15] F. Smarandache, Foundation of revolutionary topologies: An overview, examples, trend analysis, research issues, challenges, and future directions, Neutrosophic Systems with Applications, 13 (2024) 45-66.

[16] X. Zhao, Exploration of Teaching Paths in University Sports Dance Courses, Journal of Hunan University of Humanities, Science and Technology, (2014) 117-120.

[17] M. Yang, Research on Cultivation Ideas of Rhythm Awareness in University Dance Teaching, Drama House, (2015) 166-166.

[18] Y. Li, Problems and Countermeasures in University Dance Teaching: A Case Study of Dianchi College of Yunnan University, Northern Music, 36 (2016) 191-191.

[19] J. Wang, Exploration of Ways to Improve the Quality of Dance Teaching for Undergraduate Preschool Education Majors, Curriculum Education Research, (2017) 212-212.

[20] C. Zhang, Positioning and Reform Thinking of Dance Teaching in Comprehensive Universities, Popular Colors, (2019) 188-188.

[21] J. Xu, Application Research of Micro-lectures in University Sports Dance Teaching, Public Standardization, (2019) 209-212.

[22] H. Tang, G. Wu, Discussion on the Interpenetration Strategy of Traditional Art Protection and Campus Culture Innovation in the Three Gorges Reservoir Area: A Case Study of the Music and Dance College at Chongqing Normal University, Think Tank Times, (2020) 135-136.

[23] H. Duan, Y. Hong, The Impact of New Media Technology on University Dance Performance Teaching, Grand View (Forum), (2021) 66-67.

[24] P. Ge, Practical Research on Teaching Design of Dance Courses in Senior Universities Based on Goal-Oriented Theory: A Case Study of Jiangyin Senior, China Multimedia and Network Teaching (Mid-Month), (2022) 232-235.

[25] Y. Zhao, Y. Liu, Research on Teaching Reform of University Sports Courses with "MOOC+Flipped Classroom" Model: A Case Study of Sports Dance, Health and Beauty, (2024) 126-128.

[26] N. Ma, Application Research of Micro-video Assisted Teaching in Public Option Course of Sports Dance at Yan'an University, in, Yan'an University, 2024.

[27] I. Irvanizam, N.N. Zi, R. Zuhra, A. Amrusi, H. Sofyan, An Extended MABAC Method Based on Triangular Fuzzy Neutrosophic Numbers for Multiple-Criteria Group Decision Making Problems, Axioms, 9 (2020) 18.

[28] P. Biswas, S. Pramanik, and B. C. Giri, “Aggregation of triangular fuzzy neutrosophic set information and its application to multi-attribute decision making,” Neutrosophic sets Syst., vol. 12, pp. 20–40, 2016.

[29] J. Wang, G. Wei, and M. Lu, “An extended VIKOR method for multiple criteria group decision making with triangular fuzzy neutrosophic numbers,” Symmetry (Basel)., vol. 10, no. 10, p. 497, 2018.

[30] J. Wang, G.W. Wei, M. Lu, An Extended VIKOR Method for Multiple Criteria Group Decision Making with Triangular Fuzzy Neutrosophic Numbers, Symmetry-Basel, 10 (2018) 15.

[31] J.P. Fan, X.F. Jia, M.Q. Wu, A new multi-criteria group decision model based on Single-valued triangular Neutrosophic sets and EDAS method, Journal of Intelligent & Fuzzy Systems, 38 (2020) 2089-2102.

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