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Analysis Impact of Intrinsic and Extrinsic Motivation on Job Satisfaction in Logistics Service Sector: An Intelligent Neutrosophic Model

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Abstract: The success of every company relies heavily on the happiness of its workforce, and the logistics service sector is no exception. The capacity of logistics suppliers to satisfy the demands of their clients depends on the efficiency and efficacy of operations, which in turn is affected by the level of employee satisfaction. This paper aims to analyze the factors of employee satisfaction in the logistic service industry to achieve productivity and a satisfied workforce. This paper used the multi-criteria decision-making (MCDM) methodology to handle various factors. The SWARA method is an MCDM method used to compute the importance of factors. The SWARA is integrated with the neutrosophic set to handle uncertain data. This paper used single-valued neutrosophic numbers to evaluate the factors by the experts. The application of the proposed methodology is conducted. We achieved the positive work ecological is essential to the success of any business, and this is especially true in the logistics service sector. When workers feel appreciated and supported, they are more likely to give their all at work, which in turn boosts output, morale, and retention. However, given that job security isn't the only element that influences employee happiness and retention, some would say that it's the least essential aspect. So this paper can aid any organization to increase productivity and employee satisfaction by showing the importance of various employee satisfaction in logistic services.

Keywords: Logistic Service Industry; Logistic Service Provider; Neutrosophic Set; MCDM..

1. Introduction

Logistics plays an important role in the worldwide economy and is an integral part of business and financial structures. Due to its global scope and diversity, the logistics business demands a cautious, diligent, and forward-thinking attitude. Meeting record completion time constraints, adhering to new import/export rules, guaranteeing travel conformity, meeting transparency standards for product manufacturing, and traversing time zone or cultural variances with agents are just a few examples of the obstacles that may arise at any stage or type of job. These difficult problems call for highly competent people who can perform well under duress. Therefore, HRM is essential to comprehending employee happiness, which has a major bearing on the prosperity of service industries like logistics [1, 2].

Supervisors and managers need to be aware of what makes their staff happy to increase morale and productivity. Nevertheless, several research has demonstrated that the intangible aspects of staff inspiration and demotivation make it difficult to use statistical methods to analyze employee

happiness. In addition, the complicated nature of employee happiness is difficult to understand since quantitative research does not take into consideration the inherent ambiguity and inaccuracy of human behavior. On the other hand, qualitative research may help you get a deeper understanding of the elements that drive employee behavior, but it is time-consuming and difficult to quantify because of all the variables involved. Therefore, it is important to take a holistic approach to investigate to find and quantify the connections between elements associated with staff inspiration and discouragement [3, 4].

By creating and applying frameworks for decision-making for challenges that include many criteria or decision characteristics in settings where ambiguities and partial information are present multiple-criterion decision-making (MCDM) provides a workable answer to this issue. The widely used characteristics may be approximate and expressed as fuzzy data. After Zadeh introduced fuzzy sets, scholars all over the globe dove into the subject to learn more about its theoretical and practical applications [5, 6].

The idea of fuzzy sets has been expanded in several ways, with some of the most recent proposals being intuitive fuzzy sets. Neutrosophic sets are offered as a generalization of the intuitive concept of fuzzy sets. Its true, false, and ambiguous values are analogous to those of human thinking logic. The suggested study is motivated by the application of neutrosophic numbers related to MCDM approaches for the analysis of employee satisfaction in logistic service. This paper extended the SWARA method under a single-valued neutrosophic set to analyze factors of employee satisfaction in the logistic service industry [7, 8].

2. Logistic Service

From the ancient days of caravans carrying textiles and spices from India and China to Europe to the current day's Industry 4.0-driven worldwide system of linked multifaceted transport networks, logistics has gone a long way. Over the course of the previous century, international commerce and logistics have multiplied. All around the globe, new centers of industry, consumer markets, and supporting infrastructure have emerged. Logistics is the backbone of international commerce and an essential cog in international supply chain arrangements. In 2007, the Globe Bank recognized the impact that inefficient logistics has on international trade and began producing a country-level logistics performance index (LPI) every two years. The LPI is a compilation of comments from logistics experts all across the globe on six logistical factors.

Logistics, sometimes known as the "7Rs of logistics," refers to the people, procedures, and technology involved in ensuring the timely, cost-effective, and optimal delivery of goods to the intended customers. Services are more challenging to track, maintain, and enhance than physical goods. The growing specialization of the field can be attributed to the rise of novel business models [9, 10].

3. Logistic Strategy

A company's logistics strategy is derived from its overarching business plan. Assessments of both the outside world and the company's own resources and skills are used to inform strategic decisions. The proper competencies must be invested in if a logistics plan is to be put into action. It is important to use a portfolio strategy to evaluate, select, prioritize, execute, and manage these logistics investments. One of the most difficult aspects of putting a logistics strategy into action within the framework of logistics outsourcing is figuring out how to convert needed skills into choosing criteria and the appropriate performance levels of the resulting providers. Sustainability factors and the use of mixed MCDM methodologies have further complicated the discussion of criterion choice, weighting, and effectiveness aggregation.

4. Challenges of Logistic Service

The sector that Logistics Service Providers (LSPs) operate in is evolving fast. The success of your business might be hindered by factors including rising consumer expectations, a proliferation of international supply chains, fleet and staffing constraints, and elevated fixed and variable costs. If used properly, technology has the potential to address many of these concerns. It's important to figure out how to deal with specific issues.

The majority of an LSP's problems will be of the type:

i. Tracking the status of shipments in real-time, sharing that information with customers, and collecting all relevant data in one place are all examples of "visibility."
ii. Having sufficient capacity for all aspects of your fleet, including road transit and driver availability.
iii. Budgeting: including both fixed and variable expenses into profit margins and client quotations to increase predictability.
iv. Value for the customer is achieved by setting oneself apart from competitors and gaining loyalty via individualized service provision.

Large amounts of both fixed and variable expenses are assumed by LSPs, all of which must be included in price bids to assure profitability. Knowing exactly where your money is going helps you set more accurate prices for your services and better prepare your budget for future development. Advantages may be gained by LSPs by

i. Keeping up with the ever-changing price of petrol and repairs for your vehicle.
ii. Gaining insight into fees assessed by third parties like warehousing or port facilities.
iii. Cost estimation for logistics personnel, including wages, benefits, and other associated charges.
iv. Estimating the Full Cost of Operations, Including Supporting Personnel and Activities.
v. Deducting the Right Taxes.

Maintaining profit margins and reducing expenses may be accomplished with the use of a centralized perspective of all of these areas. You may plan for expansion with the use of financial data by comparing projected consumer demand with your present production capacity. It's possible to prepare for expansion in advance by acquiring the necessary trucks, personnel, and infrastructure [11, 12].

5. Employee Satisfaction in Logistic Service

Organizations can't function without happy workers, since these workers' dedication, conscientiousness, and honesty directly affect the quality of their work. Because of its impact on workers' daily lives, attitudes, and actions, the workplace is a key factor in fostering contentment in the workforce.

Based on Surugiu & Surugiu, globalization has had a major impact on the nature of work and the competitiveness of businesses. The scenario is not drastically different for businesses in the shipping and transportation service sector. In the logistical and transport sector. The position of employees has worsened dramatically as a result of cheaper service offerings from overseas logistics and transport service providers. Workers, as well as businesses, feel the effects of such precarious situations. Administrative structures are under more pressure than ever to provide high-quality services quickly and cheaply, yet this has led to a widespread disregard for certain employee demographics. Karimi et al. claims that workers' stress, frustration, or dissatisfaction might have an impact on their productivity on the job due to the variety of mental and physical demands placed on them [13, 14].

Problems and strains at work increase disproportionately affect low- and no-skilled employees when they try to acquire the necessary linguistic and temporal competence.

6. Benefits of Logistic Service

There are many benefits of logistic service:

It might be difficult for a single company to build a team of specialists in the appropriate use of cutting-edge technology, but reputable logistics service providers will have just that. They may monitor the distribution of your items to make sure they are efficiently distributed based on customer demands and the most efficient routes. It will take years of dedicated work for a single company to reach the level of proficiency that will be obtained by working together. The finest candidates for each position in the division will be chosen after a rigorous screening procedure. Therefore, they will appreciate having access to experts who are familiar with all aspects of the procedure. These factors are crucial for efficient multi-level execution, which is necessary for optimal output [15, 16].

If you want to stay ahead of the competition, you need to use cutting-edge, up-to-date technology across the board. However, if your company provides services unrelated to logistics, it might be too expensive to deploy cutting-edge technology. However, because of the consistency with which a logistics firm must deal with comparable tasks, they are more likely to incorporate cutting-edge tools into their everyday operations. If you work with a reputable Logistics firm, you'll have access to state-of-the-art technology and services.

Investment in components like cars, storage spaces, employees, etc., may raise operating expenditures, as indicated above, especially if you run a unique firm that is unrelated to logistics. Working with a Logistics provider may help you save money on overhead and stay on top of everything that needs doing. This will aid in lowering operating costs and producing the desired results more efficiently. It's been demonstrated to be more efficient than spending money on a larger infrastructure while yet allowing you to maintain market competitiveness via astute financial management [17, 18].

Among the many advantages of working with a reliable Logistics supplier is the time you'll save. Time is of the essence if you want to ship your goods to several places. The nature of the goods your company sells is also a major factor. If the products have a shorter shelf life, timely delivery is essential. Finding a trustworthy and knowledgeable service provider will be of great assistance in this regard. Products will be delivered more quickly since they will be familiar with local customs and regulations.

The supply chain relies heavily on the logistics system, which in turn relies heavily on the needs of the client base as a whole. In the modern day, most purchases are made via applications on mobile devices, and consumers are quite particular about which delivery they want. Reliable order fulfillment is possible when companies team up with a reputable logistics service provider. There will be no hiccups in the delivery process, and everything from packaging to warehousing to shipment will go as planned. To guarantee that their products are delivered according to the specifications of their clients, professionals will intelligently involve the essential aspects [19, 20].

7. Neutrosophic SWARA Model

Neutrosophy, which literally translates to "knowledge of neutral thought," is a relatively young philosophical subfield that investigates questions such as where neutralities come from, how far they extend, and how they interact with other types of ideas.

Zadeh was the first to propose using fuzzy logic. In contrast to the black-and-white values used in classical logic, facts in fuzzy logic may take on any number between zero and one. The range [0,1] is not required but is often desirable in technical contexts. Fuzzy logic allows for the evaluation of a case with values that are ambiguous or grayed out. This allows for a more nuanced assessment.

Smarandache discussed neutrosophy and the cluster methodology used in neutrosophy. In opposition to fuzzy logic, this method uses just three possible truth values to describe a statement or observation: T for truth, I for ambiguity, and F for falsehood.

A linguistic parameter is one that uses words or phrases rather than numbers to express values, whether in a natural or synthetic language. A word from the term set is used to represent the value

of a linguistic parameter. It is widely agreed that the idea of a linguistic factor is helpful for resolving difficult decision-making situations. Very important, somewhat important, not too important, not at all important, etc. are all language variables that may be used to rate the performance of alternatives based on their qualitative features. It is also possible to use one-valued neutrosophic numbers to express these linguistic characteristics [21, 22]. This section provides the neutrosophic set with the SWARA method to analyze factors of employee satisfaction in logistic service industry as shown in Figure 1.

Kersuliene et al. advocated SWARA as a weighting technique due to its ease of implementation. It relies heavily on expert judgment and employs a limited number of pair evaluations [23, 24].

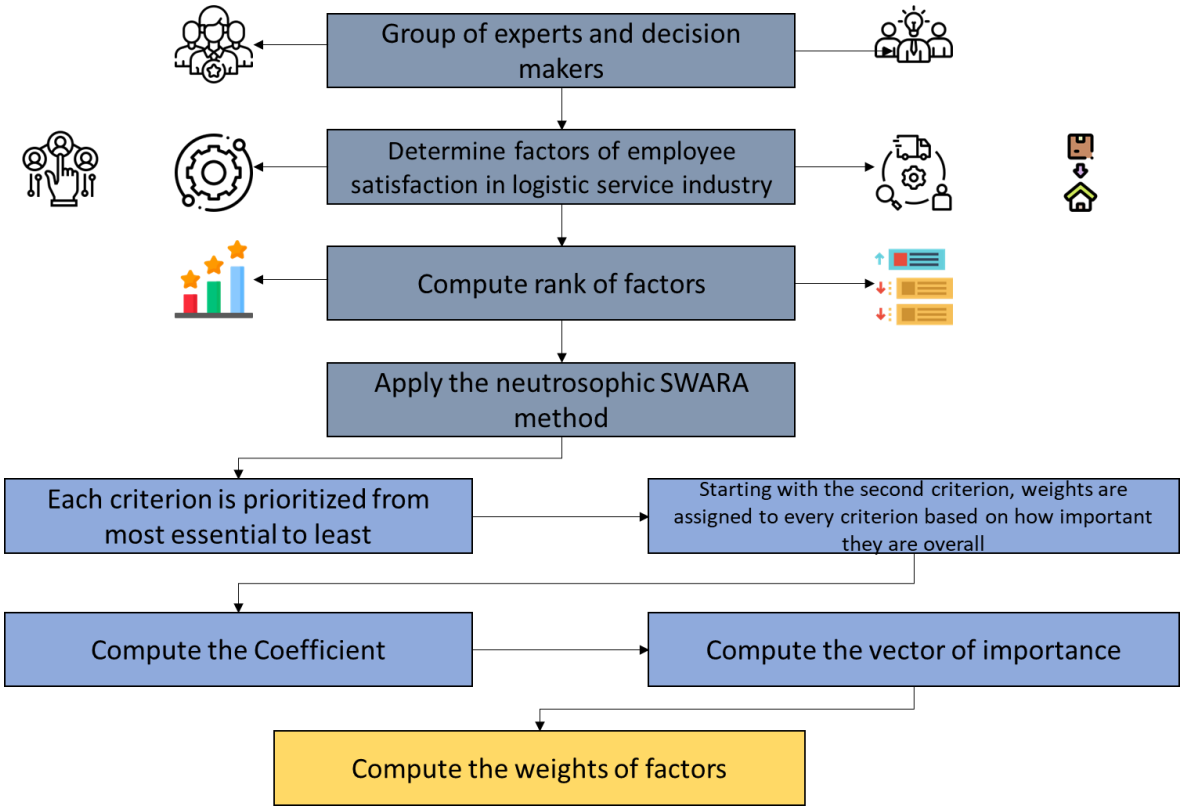

Figure 1. The framework to analysis employee satisfaction in logistic service industry.

Stage 1. Each criterion is prioritized from most essential to least.

Stage 2. Starting with the second criterion, weights are assigned to every criterion based on how important they are overall. Thus, we compare the j criteria to the $j-1$ criterion that came before it. "The relative importance of the average score" is the term used to describe this proportion.

Stage 3. Compute the Coefficient

$$p_j = \begin{cases} 1 & j = 1 \\ a_j + 1 & j > 1 \end{cases} \quad (1)$$

Where a_j value of comparison matrix

Stage 4. Compute the vector of importance

$$t_j = \begin{cases} 1 & j = 1 \\ \frac{t_{j-1}}{p_j} & j > 1 \end{cases} \quad (2)$$

Stage 5. Compute the weights of factors

$$q_j = \frac{\sum_{j=1}^{n} t_j}{n} \quad (3)$$

8. Results

Employee happiness is crucial in every business, and the logistics service sector is no exception. This section provides an analysis of factors of employee satisfaction in the logistic service industry. The research review served as the starting point for defining the factors. The studies' factors of employee satisfaction in the logistic service industry were compiled as a result of the literature review. The factors were then explored in detail during interviews with subject matter experts. This back-and-forth of ideas led to the establishment of the problem's proper factors. Specialists reached a consensus on new considerations, which were subsequently implemented. In the logistics and service sector, worker happiness is influenced by a number of variables as shown in Figure 2.

Figure 2. Employee satisfaction factors in logistic industry.

Experts evaluate the factors by building the single valued neutrosophic numbers matrix to obtain the weights of factors as shown in Table 1. Then compute the coefficient by using Eq. (1). Then compute the importance vector by using Eq. (2). Then compute the weights of factors by using Eq. (3) as shown in Figure 3.

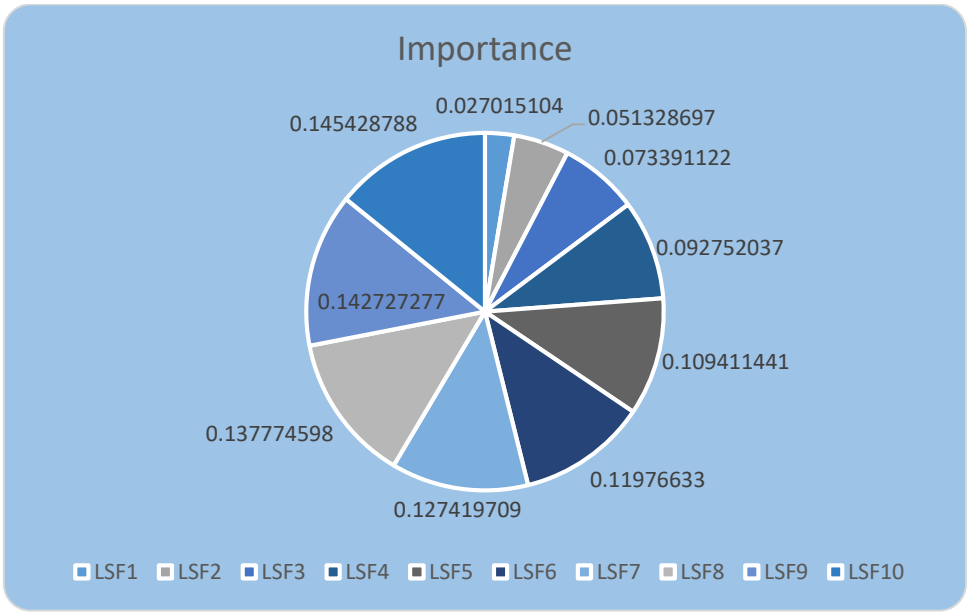

Figure 3. The importance of factors of employee satisfaction in logistic service industry.

Table 1. The neutrosophic numbers of factors employee satisfaction in logistic service industry.

	LSF_1	LSF_2	LSF_3	LSF_4	LSF_5	LSF_6	LSF_7	LSF_8	LSF_9	LSF_{10}
LSF_1	1	(0.70, 0.25, 0.30)	(0.90, 0.10, 0.10)	(0.10, 0.90, 0.90)	(0.60, 0.35, 0.40)	(0.70, 0.25, 0.30)	(0.90, 0.10, 0.10)	(0.30, 0.75, 0.70)	(0.70, 0.25, 0.30)	(0.90, 0.10, 0.10)
LSF_2	1/(0.70, 0.25, 0.30)	1	(0.40, 0.65, 0.60)	(0.60, 0.35, 0.40)	(0.30, 0.75, 0.70)	(0.70, 0.25, 0.30)	(0.30, 0.75, 0.70)	(0.60, 0.35, 0.40)	(0.90, 0.10, 0.10)	1/(0.70, 0.25, 0.30)
LSF_3	1/(0.90, 0.10, 0.10)	1/(0.40, 0.65, 0.60)	1	(0.20, 0.85, 0.80)	(0.90, 0.10, 0.10)	(0.30, 0.75, 0.70)	(0.70, 0.25, 0.30)	(0.70, 0.25, 0.30)	(0.30, 0.75, 0.70)	(0.80, 0.15, 0.20)
LSF_4	1/(0.10, 0.90, 0.90)	1/(0.60, 0.35, 0.40)	1/(0.20, 0.85, 0.80)	1	(0.80, 0.15, 0.20)	(0.20, 0.85, 0.80)	(0.30, 0.75, 0.70)	(0.40, 0.65, 0.60)	(0.90, 0.10, 0.10)	(0.40, 0.65, 0.60)
LSF_5	1/(0.60, 0.35, 0.40)	1/(0.30, 0.75, 0.70)	1/(0.90, 0.10, 0.10)	1/(0.80, 0.15, 0.20)	1	(0.90, 0.10, 0.10)	(0.10, 0.90, 0.90)	(0.30, 0.75, 0.70)	(0.40, 0.65, 0.60)	(0.60, 0.35, 0.40)
LSF_6	1/(0.70, 0.25, 0.30)	1/(0.70, 0.25, 0.30)	1/(0.30, 0.75, 0.70)	1/(0.20, 0.85, 0.80)	1/(0.90, 0.10, 0.10)	1	(0.80, 0.15, 0.20)	(0.10, 0.90, 0.90)	(0.40, 0.65, 0.60)	(0.70, 0.25, 0.30)
LSF_7	1/(0.90, 0.10, 0.10)	1/(0.30, 0.75, 0.70)	1/(0.70, 0.25, 0.30)	1/(0.30, 0.75, 0.70)	1//(0.10, 0.90, 0.90)	1/(0.80, 0.15, 0.20)	1	(0.90, 0.10, 0.10)	(0.30, 0.75, 0.70)	(0.60, 0.35, 0.40)
LSF_8	1/(0.30, 0.75, 0.70)	1/(0.60, 0.35, 0.40)	1/(0.70, 0.25, 0.30)	1/(0.40, 0.65, 0.60)	1/(0.30, 0.75, 0.70)	1/(0.10, 0.90, 0.90)	1/(0.90, 0.10, 0.10)	1	(0.80, 0.15, 0.20)	(0.80, 0.15, 0.20)
LSF_9	1/(0.70, 0.25, 0.30)	1/(0.90, 0.10, 0.10)	1/(0.30, 0.75, 0.70)	1/(0.90, 0.10, 0.10)	1/(0.40, 0.65, 0.60)	1/(0.40, 0.65, 0.60)	1/(0.30, 0.75, 0.70)	1/(0.80, 0.15, 0.20)	1	(0.90, 0.10, 0.10)
LSF_{10}	1/(0.90, 0.10, 0.10)	1/(0.90, 0.10, 0.10)	1/(0.80, 0.15, 0.20)	1/(0.40, 0.65, 0.60)	1/(0.60, 0.35, 0.40)	1/(0.70, 0.25, 0.30)	1/(0.60, 0.35, 0.40)	1/(0.80, 0.15, 0.20)	1/(0.90, 0.10, 0.10)	1

A positive work ecology is essential to the success of any business, and this is especially true in the logistics service sector. When workers feel appreciated and supported, they are more likely to give their all at work, which in turn boosts output, morale, and retention. A safe and clean workplace, pleasant working conditions, and a supportive business culture are all important to employees in the logistics service sector. Staff members who report feeling safe and valued at work are more likely to be enthusiastic about their work and committed to their success. It is particularly crucial for workers in physically demanding or possibly dangerous workplaces to have a sense of community and belonging at work, and a pleasant work environment may help foster that. Feeling appreciated and supported at work is facilitated by a business culture that encourages cooperation, collaboration, and respect.

In the logistics and service business, it is hard to choose one characteristic that workers value the least since they all contribute to a great work environment and employee retention. However, given that job security isn't the only element that influences employee happiness and retention, some would say that it's the least essential aspect. While employment stability is crucial, today's workers also value other factors, such as the chance to learn and advance in their careers, being appreciated for their contributions, being compensated fairly, and having a flexible schedule. Even when employment stability is unclear, such as in temporary roles or economic downturns, these considerations may help keep workers happy and in their jobs. Furthermore, the personal circumstances and professional aspirations of each individual may result in a varied order of importance for many aspects. An employee nearing retirement age, for instance, may value work security more highly than other considerations, whereas an individual still early in their career may value possibilities for growth and development more highly than job security. Overall, all aspects of employee happiness matter in the logistics service sector, and organizations should seek to foster an atmosphere that caters to employees' needs.

9. Conclusion

To recruit and retain top talent, boost output and efficiency, and ultimately delight consumers, logistics service providers must place a premium on employee happiness. Logistics service providers that want to stand out in a crowded market where customer pleasure is king may consider making an investment in their employees' happiness. There are many factors of employee satisfaction in the logistics service industry. So, the MCDM methodology is used in this paper to Yandel the various conflicting criteria. The SWARA method is an MCDM methodology used to compute the weights of factors. The SWARA is integrated with the single-valued neutrosophic set. This paper used single-valued neutrosophic numbers to handle the uncertain data. This paper collected ten factors to be ranked. A positive work ecology is essential to the success of any business, and this is especially true in the logistics service sector. When workers feel appreciated and supported, they are more likely to give their all at work, which in turn boosts output, morale, and retention. Job security is the least factor in employee satisfaction factors.

Data availability

The datasets generated during and/or analyzed during the current study are not publicly available due to the privacy-preserving nature of the data but are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that there is no conflict of interest in the research.

Ethical approval

This article does not contain any studies with human participants or animals performed by any of the authors.

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