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Corrigendum

Corrigendum to "A framework for risk assessment, management and evaluation: Economic tool for quantifying risks in supply chain" [Future Gener. Comput. Syst. 90 (2019) 489–502]

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The author of the above mentioned article would like to state that in the original version, which was published in the above mentioned volume, In section 5.2, step 2, the neutrosophic scale which was presented in Table 1 is used to construct the neutrosophic comparison matrices of criteria and sub-criteria. Table 1, the triangular neutrosophic scale consisted only of lower, median, and upper values of neutrosophic number, and we made the decision maker (DM) insert the degrees of truthiness, indeterminacy and falsity of these numbers according to his/her opinion and the nature of solved problem. DM is the only controller of degrees of truth, indeterminacy and falsity, we proposed that he/she should enter the highly acceptable neutrosophic ratings and we do not consider any unacceptable or tolerable neutrosophic ratings, and this is the basic principle on which our proposed score function is built. So, we built proposed score function on the highly acceptable neutrosophic ratings only, and if DM inserts any unacceptable or tolerable neutrosophic ratings we tell him "please insert the highly acceptable neutrosophic ratings through constructing comparisons matrices".

The range of highly acceptable neutrosophic ratings is $0.5 < T_{ij} < 1$; $0 < I_{ij} < 0.5$ and $0 < F_{ij} < 0.5$, for $i = 1; 2; \ldots; m$ and $j = 1; 2; \ldots; n$, where T_{ij}, I_{ij}, F_{ij} are the truth, indeterminacy and falsity degrees. In order to transform neutrosophic number $(\tilde{a}_{ij})$ to crisp number (a_{ij}), we used the proposed score function which is as follows:

$$s(\tilde{a}_{ij}) = \frac{L_{\tilde{a}_{ij}} + M_{\tilde{a}_{ij}} + U_{\tilde{a}_{ij}}}{3} + \left(T_{\tilde{a}_{ij}} - I_{\tilde{a}_{ij}} - F_{\tilde{a}_{ij}}\right) \quad (1)$$

So, if DM used values of $T_{\tilde{a}_{ij}}$, $I_{\tilde{a}_{ij}}$, $F_{\tilde{a}_{ij}}$ which belong to the highly acceptable neutrosophic ratings, then the result value will never be zero. Then, this score function is use only for the highly acceptable neutrosophic ratings of T_{ij}, I_{ij}, F_{ij}, where $0.5 < T_{ij} < 1$; $0 < I_{ij} < 0.5$; and $0 < F_{ij} < 0.5$.

In case of DM wants to use both tolerable and highly acceptable neutrosophic ratings, or tolerable neutrosophic ratings only in his/her matrix, then he/she must use other score function. For example the DM can use the following score function:

$$s(\tilde{a}_{ij}) = \frac{L_{\tilde{a}_{ij}} + M_{\tilde{a}_{ij}} + U_{\tilde{a}_{ij}}}{3} + \left(T_{\tilde{a}_{ij}} \times I_{\tilde{a}_{ij}} \times F_{\tilde{a}_{ij}}\right) \quad (2)$$

The DM can also propose any score function which he/she believes suits his/her propositions.

Section 5.2, step 3 should be:

Step 3: Use the following score function to transform neutrosophic matrix to crisp matrix:

If we have triangular neutrosophic number as follows $\tilde{a}_{ij} = \langle (L_{\tilde{a}_{ij}} + M_{\tilde{a}_{ij}} + U_{\tilde{a}_{ij}}); T_{\tilde{a}_{ij}}, I_{\tilde{a}_{ij}}, F_{\tilde{a}_{ij}} \rangle$, where $L_{\tilde{a}_{ij}}$, $M_{\tilde{a}_{ij}}$, $U_{\tilde{a}_{ij}}$ are the lower, median and upper bounds of the triangular number, and $T_{\tilde{a}_{ij}}$, $I_{\tilde{a}_{ij}}$, $F_{\tilde{a}_{ij}}$ are the truth, indeterminacy and falsity degrees of triangular neutrosophic number. Then the score function of $\tilde{a}_{ij}$ is as follows:

$$s(\tilde{a}_{ij}) = \frac{L_{\tilde{a}_{ij}} + M_{\tilde{a}_{ij}} + U_{\tilde{a}_{ij}}}{3} + \left(T_{\tilde{a}_{ij}} - I_{\tilde{a}_{ij}} - F_{\tilde{a}_{ij}}\right) \quad (3)$$

After transforming all neutrosophic numbers to crisp numbers, then we now have a crisp pairwise matrix, and in this matrix the value of $a_{ji} = \frac{1}{a_{ij}}$. Since $s(\tilde{a}_{ij}) = a_{ij}$, then the value of a_{ji} can also be written as: $a_{ji} = \frac{1}{s(\tilde{a}_{ij})}$ (2), and the reader must note that we now deal with crisp matrix – not neutrosophic matrix (i.e. if $a_{ij} = 5$, this means that the $s(\tilde{a}_{ij})$'s were equal to 5, and then $a_{ji} = \frac{1}{a_{ij}}$ or $\frac{1}{s(\tilde{a}_{ij})} = 1/5$, so the reader should know that the division rule of neutrosophic set does not apply herein. From the previous propositions and basics, we obtained the crisp comparison matrix that has $a_{ij} > 0$, and $a_{ij} \times a_{ji} = 1$.

Finally, Section 6, Table 2, the corrected table is shown in Table 1.

$s(\langle (1, 1, 1); 0.60, 0.40, 0.40 \rangle) = 0.8 \approx 1$, $s(\langle (1, 2, 3); 0.65, 0.4, 0.3 \rangle) = 1.95 \approx 2$, $s(\langle (5, 6, 7); 0.70, 0.25, 0.30 \rangle) = 6.15 \approx 6$, and $s(\langle (3, 4, 5); 0.60, 0.35, 0.40 \rangle) = 3.85 \approx 4$, as appeared in Table 3 in the original paper.

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Table 1
The final comparison matrix of criteria according to objective with respect to manager's opinions.

Objective	C_1	C_2	C_3
C_1	⟨(1, 1, 1); 0.60, 0.40, 0.40⟩	⟨(1, 2, 3); 0.65, 0.4, 0.3⟩	⟨(5, 6, 7); 0.70, 0.25, 0.30⟩
C_2		⟨(1, 1, 1); 0.60, 0.40, 0.40⟩	⟨(3, 4, 5); 0.60, 0.35, 0.40⟩
C_3			⟨(1, 1, 1); 0.60, 0.40, 0.40⟩

The authors would like to apologise for any inconvenience caused.