A STUDY ON THE INDICATOR ANALYSIS OF SUSTAINABLE DEVELOPMENT FOR THE SPACE CONSTRUCTION AROUND THE MIAOLI STATION

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Abstract—The study tried to focus on the wide-ranging thoughts for the connection among the different potential sites for the cultural, historical, and sustainable development. The important facets and factors were discussed by fuzzy Delphi method for the space construction around the Miaoli stations. The study integrated the expert's group opinions by means of Fuzzy Delphi method, and its results showed that the "Environmental development(A)" attained the most significant influence than others, and it was followed by the dimension of "Public-Private collaboration(C)", "Space creation(D)", and "Cultural catalyst(B)". The interview and expert feedback, it was obvious that the core of four guidelines was the "Environmental development (A)", while combining with the "Space creation (D)" and "Cultural catalyst (B)", it could create a better possibility for the urban development. Also, when it was further integrated with the "Public-Private collaboration(C)", it would revitalize and improve the space creation, local economic development, and community revitalization as well.

Keywords: Fuzzy Delphi method (FDM), sustainable indicators, Miaoli station, space constructi

I. INTRODUCTION

Based on the UNEP 2008 Annual Report, even though tourism is a low-polluting industry with the development and growth of city, lots of urban spaces had older and declined so that the outflows of the young people, residents and visitors were happened[1, 2]. However, these spaces owned historical narrative potential and textures to show the local developing process[3]. The principles of the urban renewal might be a possible solution for the issues[4], but they are not cure-all to meet the different situation for the re-development of each urban space[5]. Therefore, urban re-development was always mentioned about the local history and cultural development[6-8], and its strategies were one of the drives to improve the local development[7].

With the economic development and the change of environment, the urban areas met lots of problems, such as urban enlarging, downtown declining, and traditional culture losing[9]. The representative spaces were forgot and viewed as deserted spaces, and then the population and traditional industries were loosed to impact the development of city[10]. However, the representative spaces play important roles to record the city history and citizen memory, and they showed the space traits and the genius loci[9]. The spaces were not only the real environment but also the social phenomenon[6].Therefore, the spaces owned the historical and cultural spirits to push the development of life environmental and economic activities[5]. Moreover, the different visions and perspectives of cities were showed from different orientations[11].

With the trend of sustainable development and global climate change, the issue of urban sustainable development becomes one of the main environmental solutions[5, 12]. Many countries try to improve the traditional development ways and look forward to an alternative way to overcome the environmental impacts of human activities, especially the urban area with cultural meaning[7, 13]. Taiwan owned lots of rich and well-known cities with cultural resources, and the development were vivid[14]. Therefore, the impacts of development were huge so that the natural or cultural resources were damaged often [15, 16]. However, the cultural heritages or local cultural industries had enough attractive to attract many tourists or customers, but they were not able to endure the high density use[17]. Then, the high density use made massive carbon emission, and it also made the cultural loss[14]. Therefore, the sustainable development of urban area, especially the core of city, became a trend toward to more suitable and sustainable management ways.

The Miaoli station played a key role for the Miaoli County, but the surrounding environment owned negative identities, broken building, lack of planned landscape, and Insecure space, from the citizens and users[18]. However, the surround of Miaoli station owned convenient transportation, traditional culture, and heritages, but the local government was not able to own comprehensive consideration and vision to connect each other[19]. The study tried to focus on the wide-ranging thoughts for the connection among the different potential sites, the cultural, historical and sustainable development. The important facets and factors were discussed by fuzzy Delphi method for the space construction around the Miaoli stations.

II. MATERIAL AND METHOD

A. MCDM (Multiple criteria decision making) and FDM (Fuzzy Delphi method)
Multiple criteria decision making (MCDM) is a

structured technique for accounting with complex decisions[20]. Rather than prescribing a "correct" decision, the much of MCDM helps the decision makers find the one that best suits their needs and their understanding of the problem[21, 22]. Based on mathematics and psychology, one of them was developed by Thomas L. Saaty in the 1970s and has been extensively studied and refined since then[23]. The methods for the MCDM were diverse, and they provide a comprehensive and rational framework for structuring a decision problem[24], for representing and quantifying its elements, for relating those elements to overall goals, and for evaluating alternative solutions[25]. It is used around the world in a wide variety of decision situations[26], in fields such as government, business, industry, healthcare, and education[27-30]. For this study, MCDM offered a wider vision to discuss the influenced factors[24], and then it also offered a clear and easy-understanding way for the frame analysis[31]. Therefore, the study tried to use the fuzzy Delphito developthe evaluation frame of cultural landscape conservation.

The Fuzzy Delphi Method (FDM) was the modified and enhanced version of the classical Delphi technique[27]. Improvement was made to rectify the imperfection of traditional Delphi Methodthat leads to low convergence in retrieving outcomes, loss of important information, and long progress of investigation[19]. Nevertheless, this approach has been employed in various application domains, including social sciences, management, business, and engineering [32-34]. In addition, the literature has exposed numerous key issues in relation to the existing FDM that need to be resolved with regard to the classical DM[35, 36]. Hence, the analysis obtained from the existing literature highlighted two key issues, which were; most FDM ignored certain important characteristics of DM[37], and lack of explanation on how FDM obtained controlled feedback with the lack of iteration process[34, 35]. Additionally, it was observed that there had been lack of comparison between decision outcomes obtained based on FDM and the decision outcomes obtained from the traditional DM[38].

B. Factor selections for the model establishment

There are many different orientations, such as environment, culture, to establish thepossible factors. The urban spaces with the historical and cultural spirits were not managed as traditionalgovernance, and the sustainability thoughts, including both material and energy flows, were needed. For the future development, the city and nature might maintainharmonious [39, 40]. In the other words, the aesthetics of urban landscape and environmental identity were considered carefully[41], and then both the local economic development and peripheral manufacturer counseling were followed closely[42]. In addition, the cultural catalyst was viewed as the sustainable symbol to show the history and memory of

citizen, so that the cultural issues were significant for a historical city. Firstly, the historical meaning showed the potential of city memory, and it also showed the possibility of future development[4]. Moreover, the cultural texture development washappened with the urban history, and then it owned the city memory from most of citizen [4, 43]. Then, the social cultural conservation and cultural development potential was needed to prove the cultural possibility for the improvement of cultural development for the urban sustainability [4, 13]. The social cultural conservation was able to support the local policies to encourage the conservation consciousness[6], and the cultural development potential play a key factor to lead the public and government to meet the cultural conservation issues[44, 45]. The community and governances were necessary to improve the issues[6].

C. MCDM Frame

The sustainability index system for the issues is a complex system with multi subjects and multi-levels. It is composed of Environmental development, Cultural catalyst, Public-Private collaboration and Space creation. Based on the analysis, the evaluation index system of the sustainable development for the space construction could be divided into four subsystems—Environmental development (A), Cultural catalyst (B), Public-Private collaboration (C) and Space creation (D). In order to establish the index system for sustainability of urban space construction, to find out the proper assessment factors is most important. The factors should be able to represent the features of it.

Finally, it established four subsystems and use16 indicators for the integrated analysis, including aesthetics of urban landscape, environmental identity, economic development, peripheral manufacturer counseling, social cultural conservation, cultural development potential, historical meaning, cultural texture development, community identity, community participation, organizational effectiveness, communication coordination, space identity, environmental activation , spatial development potential, and integration of tourism resources .

(1) Environmental development (A)

For the environmental development, aesthetics of urban landscape (a1), environmental identity (a2), economic development (a3) and peripheral manufacturer counseling (a4) were selected as the factors of A.

(2) Cultural catalyst (B)

For cultural catalyst, social cultural conservation (b1), cultural development potential (b2), historical meaning (b3) and cultural texture development (b4) were selected as the factors of B.

(3) Public-Private collaboration (C)

For the public-private collaboration, community identity (c1), community participation (c2), organizational effectiveness (c3) and communication coordination (c4) were selected as the factors of C.

(4) Space creation (D)

For the space creation, the space identity (d1), environmental activation (d2), spatial development potential (d3) and integration of tourism resources (d4) were selected as the factors of D.

It made sure the relative relationship among the influence factors by using literature review and pre-research, and it also confirmed the inter-relationship and frameof cultural landscape conservation by using the expert questionnaires and in-depth interview. The factors in the frame were three levels, including the main goal, level 1, and level 2. Moreover, the level 1 included four parts, environmental development(A), Cultural catalyst (B), Public-Private collaboration (C) and Space creation (D). Then, the factors in the other level were viewed as Figure 1.
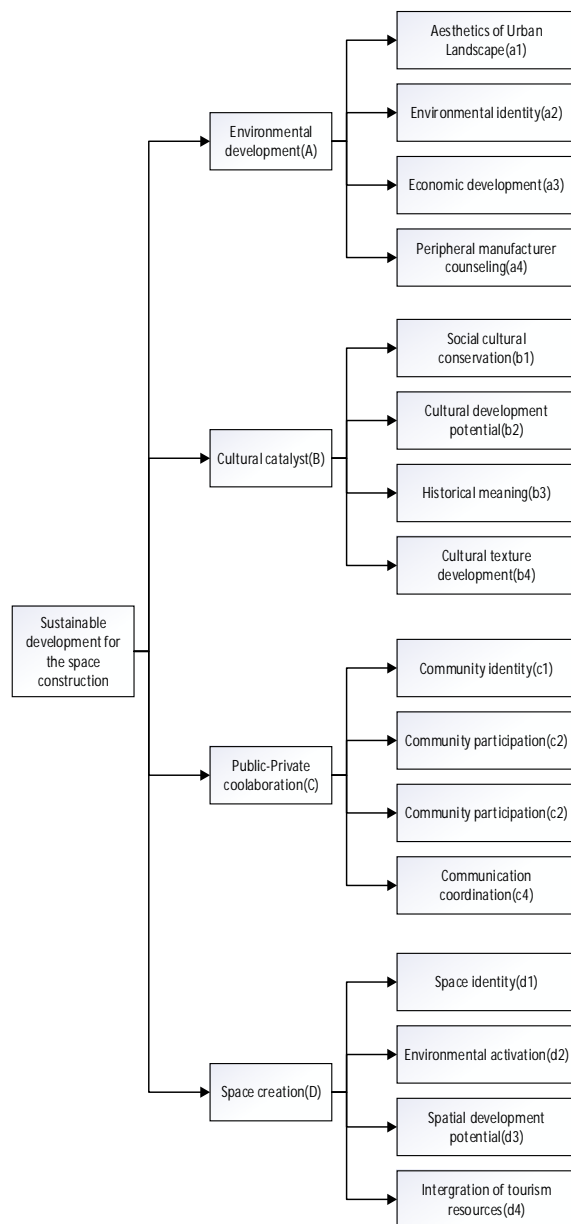

Figure 1. The framework of the Fuzzy Delphi Method

Meanwhile, the related experts were chosen, and the amount of the experts for the questionnaires was 13, and the background were wide to cover the different fields, including architecture, landscape, urban planning, community development, construction, engineering, and so on. Through the two-step expert questionnaires, the relative weight has been accounted by using the software, Power Choice, and the results could be put on the framework to assess the potential conservation strategies.

III. RESULT

It was not sure whether the indicators initially selected with reference to literature reviews and interviews were suitable or not. Therefore, this studytried to have expert consensus through the Fuzzy Delphi Method to create a framework related toenvironmental education for cultural heritage and low carbon tourism. Because Fuzzy Delphi Method was not only able to effectively verify the effect of uniform convergence across different experts, including architects, industry managers, scholars and government officers, but also it could reduce the number of repeated questions. Therefore, the study adopted this method to filter the evaluation criteria of environmental education for cultural heritage and low carbon tourism in order to obtain more objective and practical assessment framework. Whereas, the algorithms were implemented using the following steps:

Step 1: Calculating maximum and minimum values

First, it must deign the assessment items needed by the fuzzy expert questionnaire in accordance with the research objectives and goals, and then asking every export to look into each assessment item and set a "minimum" value over the closed interval, that is, the said assessment item was deemed to be the "most conservative cognition" of the quantitative score; while setting a "maximum" value over the closed interval, that is, the said assessment item was deemed to be the "most optimistic cognition" of the quantitative score. The results were shown as follows (see Table 1):

Table 1. The calculation of minimum and maximum values of indicators (S=6.5)

Dimension	Minimum		Maximum		Best value		Mean			Z^i	G^i
Indicators	Min	Max	Min	Max	Min	Max	Min	Max	Best		
Environmental development(A)											
Aesthetics of Urban Landscape(a1)	3	8	5	10	6	9	5.67	8.02	7.35	0.65	7.02
Environmental identity(a2)	5	9	8	10	7	10	6.88	9.19	8.14	1.31	8.49
Economic development(a3)	4	9	7	10	6	10	6.27	8.60	7.58	0.33	7.71
Peripheral manufacturer counseling(a4)	4	9	7	10	5	10	5.70	8.47	7.47	0.23	7.16
Cultural catalyst(B)											
Social cultural conservation(b1)	4	9	7	10	6	10	6.16	8.79	7.71	0.63	7.84
Cultural development potential(b2)	3	8	5	10	4	9	5.21	7.89	6.54	0.31	6.58
Historical meaning(b3)	5	8	7	10	6	10	5.79	8.72	7.57	1.92	6.91
Cultural texture development(b4)	5	8	6	10	6	9	5.60	8.45	7.27	0.86	6.39
Public-Private collaboration(C)											
Community identity(c1)	4	7	7	10	6	9	5.38	8.29	6.84	2.91	6.68
Community participation(c2)	4	8	7	10	6	10	6.01	8.59	7.67	1.58	7.52
Organizational effectiveness(c3)	4	8	7	10	6	10	6.34	9.05	8.02	1.71	8.27
Communication coordination(c4)	4	9	8	10	7	10	6.02	9.08	7.96	1.25	7.25
Space creation(D)											
Space identity(d1)	4	8	5	10	5	10	6.12	8.21	7.36	0.91	7.26
Environmental activation(d2)	3	8	6	10	5	10	5.47	8.44	7.21	0.98	7.29
Spatial development potential(d3)	3	9	6	10	4	10	5.45	8.32	7.11	0.13	7.15
Integration of tourism resources(d4)	3	9	6	10	5	10	5.16	8.34	7.32	0.18	6.97

Step 2: Creating triangular fuzzy numbers

Through the scores obtained from the above-said Step 1, it was able to establish the triangular fuzzy numbers of the "most conservative cognition of the quantitative score" and the "most optimistic cognition of the quantitative score" respectively.

Step 3: Establishing the expert consensus on the degree of importance

If two triangular fuzzy numbers were not overlapping each other, (⬚), indicating that the interval value of expert opinions contained a consensus segment and the expert opinions were within the analogous range.

Step 4: Obtaining the decision threshold

Finally, the decision threshold (S) was determined by decision-maker, according to the research objectives and future method of operation, to decide whether the expert consensus was accepted or not, that is, if the importance value of consensus of a factor Gi is greater than or equal to the threshold value (Gi⬚S), under this circumstance, this factor would be accepted and be considered as an evaluation factor, on the contrary, if (Gi < S), this factor would be deleted. In addition, how to adjust the threshold value (S) was all depend on the decision-maker's (the researcher's) subjective judgment [32, 35, 36, 38].

Based on the preceding procedure and results, the new results of calculations were shown in Table 2:

Table 2. The sorting table of importance value of consensus of 16 screening factors

Order	Factors	G^i
1	Environmental identity	8.49
2	Organizational effectiveness	8.27
3	Social cultural conservation	7.84
4	Economical development	7.71
5	Community participation	7.52
6	Environmental activation	7.29
7	Space identity	7.26
8	Communication coordination	7.25
9	Peripheral manufacturer counseling	7.16
10	Spatial development potential	7.15
11	Aesthetics of Urban Landscape	7.02
12	Integration of tourism resources	6.97
13	Historical meaning	6.91
14	Community identity	6.68
15	Cultural development potential	6.58
16	Cultural texture development	6.50

CONCLUSION

The study integrated the expert's group opinions by means of Fuzzy Delphi method, and its results showed that the "Environmental development(A)" attained the most significant influence than others, and it was followed by the dimension of "Public-Private collaboration(C)", "Space creation(D)", and "Cultural catalyst(B)". The interview and expert feedback, it was obvious that the core of four guidelines was the "Environmental development (A)", while combining with the "Space creation (D)" and "Cultural catalyst (B)", it could create a better possibility for the urban development. Also, when it was further integrated with the "Public-Private collaboration(C)", it would revitalize and improve the space creation, local economic development, and community revitalization as well.

In the point of view of "Environmental development (A)", the "Environmental identity (a2)" played a much more important role than others, and it was followed by the "Economic development (a3)", "Peripheral manufacturer counseling (a4)" and "Aesthetics of Urban Landscape (a1)". Based on the interview and expert feedback, the core of four principles was surely the "Environmental identity (a2)", which could combine with the "Economic development (a3)" and "Peripheral manufacturer counseling (a4)" to organize other organizations for improving the economics of the district with the promotion of "Aesthetics of Urban Landscape (a1)".

Under the dimension of "Cultural catalyst (B)", the "Social cultural conservation (b1)" played the most important role among others. Based on the interview and expert feedback, the "Social cultural conservation(b1)" was the core of four guidelines, which could be integrated with the "Cultural development potential(b2) ", "Historical meaning(b3) "and "Cultural texture development(b4)" to increase the number of manpower based on the requirement for the empowerment through environmental education. The "Organizational effectiveness (c3)" was a key to the dimension of "Public-Private collaboration(C)", and it was followed by the "Community participation (c2)" and "Community identity (c1)". Categorically, the "Organizational effectiveness (c3)" was the core of three principles, which handled the perspective for the future development of community future and improvement along with the "Community identity (c1)", "Community participation (c2)" and "Communication coordination (c4) while examining the result of the causal diagram analysis; In the dimension of "Space creation (D)", the "Environmental activation (d2)" was the much more important than others. It was followed by the "Space identity (d1)", "Spatial development potential (d3)" and "low carbon transport (d4)". Based on the interview and expert feedback, the "Space identity(d1)", "Environmental activation(d2)" and "Spatial development potential(d3)" were the cores in the development of low carbon tourism, and the "Integration of tourism resources(d4)" was supporting the core idea to create a substantive way to achieve the goal.

To sum up, the main finding showed that "the Environmental identity" was the most important factor for this issue. Then, "Organizational effectiveness", "Social cultural conservation", "Economic development", "Community participation" and "Environmental activation" played more important roles. Though the study had found the relative factors for the issues, more methods will need to be involved to establish a reasonable and suitable evaluation model.

In Taiwan, the government always concerned the

issues to the economic development, but the main finding showed different situation. The environmental identity was usually ignored by central and local governments, so that the environmental identity construction will be one of the main issues for them. Secondly, the organizational effectiveness in Taiwan was weak to encourage renew of city development, but it was easily for the improvement through the policy making and regulations. Then, the economic development surprisingly occupies an important position, so that the space sustainable constructions need to create more possibility to improve the economic development. Then, vivid economic activities are able to improve tangible and invisible resources for the sustainability. Surprisingly, the potential for cultural development and cultural texture are at the bottom of all the indicators.

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REFERENCE

[1] Gössling, S., C.M. Hall, and D.B. Weaver, *Sustainable tourism futures: Perspectives on systems, restructuring and innovations*, in *Sustainable tourism futures*. 2009, Routledge. p. 21-36.

[2] Kolk, A., *Sustainability, accountability and corporate governance: exploring multinationals' reporting practices.* Business Strategy and the Environment, 2008. **17**(1): p. 1-15.

[3] Cocks, M., S. Vetter, and K.F. Wiersum, *From universal to local: perspectives on cultural landscape heritage in South Africa.* International Journal of Heritage Studies, 2018. **24**(1): p. 35-52.

[4] Li, F., et al., *Measurement indicators and an evaluation approach for assessing urban sustainable development: A case study for China's Jining City.* Landscape and Urban Planning, 2009. **90**(3-4): p. 134-142.

[5] Chan, E. and G.K. Lee, *Critical factors for improving social sustainability of urban renewal projects.* Social Indicators Research, 2008. **85**(2): p. 243-256.

[6] Jenks, M., *Achieving sustainable urban form.* 2000: Taylor & Francis.

[7] Dempsey, N., et al., *The social dimension of sustainable development: Defining urban social sustainability.* Sustainable development, 2011. **19**(5): p. 289-300.

[8] Scipioni, A., et al., *The Dashboard of Sustainability to measure the local urban sustainable development: The case study of Padua Municipality.* Ecological indicators, 2009. **9**(2): p. 364-380.

[9] Lucic, L., *Changing Landscapes, Changing Narratives: Socio-Cultural Approach for Teaching Global Migrants.* Pedagogy, Culture and Society, 2016. **24**(2): p. 221-237.

[10] Jeon, J.Y., et al., *Non-auditory factors affecting urban soundscape evaluation.* J Acoust Soc Am, 2011. **130**(6): p. 3761-70.

[11] Todaro, M.P., *A model of labor migration and urban unemployment in less developed countries.* The American economic review, 1969. **59**(1): p. 138-148.

[12] Laal, M., *A brief history of enviroethics and its challenges.* J Med Ethics Hist Med, 2009. **2**: p. 10.

[13] Chiesura, A., *The role of urban parks for the sustainable city.* Landscape and Urban Planning, 2004. **68**(1): p. 129-138.

[14] Salvati, L., et al., *Land-cover changes and sustainable development in a rural cultural landscape of central Italy: classical trends and counter-intuitive results.* International Journal of Sustainable Development & World Ecology, 2017. **24**(1): p. 27-36.

[15] Simmons, D.A., *Are we meeting the goal of responsible environmental behavior? An examination of nature and environmental education center goals.* The Journal of Environmental Education, 1991. **22**(3): p. 16-21.

[16] Lindborg, T., et al., *Climate change and landscape development in post-closure safety assessment of solid radioactive waste disposal: Results of an initiative of the IAEA.* J Environ Radioact, 2018. **183**: p. 41-53.

[17] Crumley, C.L., et al., *Studying long-term changes in cultural landscapes: outlines of a research framework and protocol.* Landscape Research, 2017. **42**(8): p. 880-890.

[18] Fell, D., *1 Social movements in Taiwan after 2008.* Taiwan's Social Movements Under Ma Ying-jeou: From the Wild Strawberries to the Sunflowers, 2017. **19**: p. 1.

[19] Wu, K.-Y., *Applying the fuzzy Delphi method to analyze the evaluation indexes for service quality after railway re-opening–using the old mountain line railway as an example.* Recent Researches in System Science, 2011. **1**: p. 474-479.

[20] Tsaur, S.-H., T.-Y. Chang, and C.-H. Yen, *The evaluation of airline service quality by fuzzy MCDM.* Tourism management, 2002. **23**(2): p. 107-115.

[21] Schelling, T., *The life you save may be your own*, in *Problems in public expenditure analysis*, S. Chase, Editor. 1968, Brooklings Institution: Washinton, D. C. p. 143-144.

[22] Hsieh, T.-Y., S.-T. Lu, and G.-H. Tzeng, *Fuzzy MCDM approach for planning and design tenders selection in public office buildings.* International journal of project management, 2004. **22**(7): p. 573-584.

[23] Millet, I. and P.T. Harker, *Globally Effective Questioning In the Analytic Hierarchy Process.* European Journal of Operational Research, 1990. **48**: p. 88-97.

[24] Hwu, T.-J., J.-N. Hwang, and N. Erdenebat, *Improving competitiveness performance using a novel hybrid MCDM model for Mongolian coal export strategy.* International Journal of Kansei Information, 2015. **6**(4): p. 87-104.

[25] Hwu, T.-J. and T.-A. Shagdar, *Competitive Analysis on Leather Industry in Mongolia Based on Strategies Using a Novel Hybrid MCDM Model.* International Journal of Kansei Information, 2017. **8**(3): p. 49-65.

[26] Lu, M.-T., G.-H. Tzeng, and L.-L. Tang, *Environmental Strategic Orientations for Improving Green Innovation Performance in Fuzzy Environment-Using New Fuzzy Hybrid MCDM Model.* International Journal of Fuzzy Systems, 2013. **15**(3): p. 297-316.

[27] Chang, I.S., et al., *An efficient approach for large scale project planning based on fuzzy Delphi method.* Fuzzy sets and systems, 1995. **76**(3): p. 277-288.

[28] Gibert, K.C., D.D. Holmes, and R.E. Rossenthal, *A multiobjective discrete optimization model for land allocation.* Management Science, 1985. **31**: p. 1509-1552.

[29] Klir, G. and T. Folger, *Fuzzy sets, uncertainty, and information.* 1988: Prentice Hall.

[30] Kuo, Y.F. and P.C.Chen, *Constructing performance appraisal indicators for mobility of the service industries using fuzzy delphi method.* Expert systems with applications, 2008. **35**: p. 1930-1939.

[31] Opricovic, S. and G.-H. Tzeng, *Compromise solution by MCDM methods: A comparative analysis of VIKOR and TOPSIS.* European journal of operational research, 2004. **156**(2): p. 445-455.

[32] Hsu, Y.-L., C.-H. Lee, and V.B. Kreng, *The application of Fuzzy Delphi Method and Fuzzy AHP in lubricant regenerative technology selection.* Expert Systems with Applications, 2010. **37**(1): p. 419-425.

[33] Ma, C., P. Zhu, and T. Lu, *Some chaotic properties of fuzzified dynamical systems.* Springerplus, 2016. **5**: p. 640.

[34] Tan, C.-Q. and X.-H. Chen, *Interval-Valued Intuitionistic Fuzzy Multicriteria Group Decision Making Based on VIKOR and Choquet Integral.* Journal of Applied Mathematics, 2013. **2013**: p. 546-561.

[35] Ishikawa, A., et al., *The max-min Delphi method and fuzzy Delphi method via fuzzy integration.* Fuzzy sets and systems, 1993. **55**(3): p. 241-253.

[36] Kuo, Y.-F. and P.-C. Chen, *Constructing performance appraisal indicators for mobility of the service industries using Fuzzy Delphi Method.* Expert Systems with Applications, 2008. **35**(4): p. 1930-1939.

[37] Chang, P.-L., C.-W. Hsu, and P.-C. Chang, *Fuzzy Delphi method for evaluating hydrogen production technologies.* International Journal of Hydrogen Energy, 2011. **36**(21): p. 14172-14179.

[38] Ma, Z., et al., *Constructing road safety performance indicators using fuzzy delphi method and grey delphi method.* Expert Systems with Applications, 2011. **38**(3): p. 1509-1514.

[39] Nakamura, H., *Political and environmental attitude toward participatory energy and environmental governance: A survey in post-Fukushima Japan.* Journal of Environmental Management, 2017. **201**: p. 190-198.

[40] Curenton, S.M., *Understanding the Landscapes of Stories: The Association between Preschoolers' Narrative Comprehension and Production Skills and Cognitive Abilities.* Early Child Development and Care, 2011. **181**(6): p. 791-808.

[41] Nasar, J.L., *Urban Design Aesthetics:The Evaluative Qualities of Building Exteriors.* Environment and Behavior, 1994. **26**(3): p. 377-401.

[42] Cox, K.R. and A. Mair, *Locality and Community in the Politics of Local Economic Development.* Annals of the Association of American Geographers, 1988. **78**(2): p. 307-325.

[43] Antrop, M., *Sustainable landscapes: contradiction, fiction or utopia?* Landscape and Urban Planning, 2006. **75**(3-4): p. 187-197.

[44] Hwu, T.-J., W.-C. Yu, and C.-S. Lai, *A Study on Evaluation Indicators of Cultural and Creative Product Development.* International Journal of Kansei Information, 2014. **5**(2): p. 1-14.

[45] Lehr, J.C. and S. Cipko, *The Ukrainian Cultural Landscape in Canada and Brazil: A Century of Change and Divergence.* Canadian Ethnic Studies, 2015(4/5): p. 171-204.

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