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A Feeling Expansion Model of Environment-related QOL for Leisure Tourism

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1. Introduction

In September 2000, The Millennium Development Goals (MDGs) (United Nations, 2013) were set up as the common goals to develop the international community. It is based on the United Nations Millennium Declaration adopted at the UN Millennium Summit in New York. The MDGs have set eight goals to be achieved by 2015, such as the eradication of extreme poverty and hunger, and have achieved some results by 2015, the deadline for achievement. Its contents are drawn to the 2030 Agenda for Sustainable Development (2030 Agenda) as a successor. In 2015, the United Nations formally adopted the new framework, "Transforming Our World: the 2030 Agenda for Sustainable Development," which comprises seventeen goals and 169 targets to wipe out poverty, fight inequality, and tackle climate change over the next fifteen years. These goals are called SDGs (Sustainable Development Goals) (United Nations, 2018), and include "good health and wellbeing," "climate action," and "life on land," as elements of QOL (Quality of Life) which indicate human wellbeing. Wellbeing has been the focus of diverse fields in recent years, including philosophy, sociology, health science, and psychology, and describes a broad range of terms, such as "quality of life," "life satisfaction," "happiness," and "wellness." Nakashima and Hirano (2018) introduced the concept of e-QOL (Environment-related QOL) to identify trends in feelings of wellbeing and we will apply this expanding concept of QOL to the leisure tourism field in this paper.

Leisure tourism is an easy way to realize personal wellbeing and gain satisfaction. In addition, the natural environment offers beautiful scenery and comfortable feelings for tourists, meaning that concept of e-QOL would be enhanced by the leisure tourism. "Word of mouth" information in leisure tourism is often based on SNSs (Social Networking Services), which provide more reliable and important information for travelers than tourist targeted website information, due to the individually-oriented information provided.

Our research comprised a quantitative analysis of Tweets to find the metrics of the relationship between tourism and wellbeing and identify obstacles in terms of feelings of wellbeing. We implemented an information gathering system and extracted a broad range of elements indicating individual people's feelings. We proposed a two-word expanding model based on the co-occurrence relation. Our model will extract the expansion of diverse concepts, aggregate a few words to a concept, and qualitatively evaluate the expansion of concept. Our research could establish a new method for expanding concepts based on keyword co-occurrence relations. In addition, we will investigate to evaluate how the feeling flow will expand in leisure tourism based on the NLP (Natural Language Processing) analysis using the noun, adjective and verb words.

2. Related Researches

2.1 Definition of QOL by EU-stat

Eurostat is the statistical office of the European Unions, based in Luxembourg (LU) and provide the recent statistics on the quality of life in the EU (Eurostat online publications. (2019)). Eurostat provides a detailed analysis of 8+1 dimensions which can be measured statistically to represent the different complementary aspects of quality of life. This metrics complements the economic and social development indicator: gross domestic product (GDP). Eight of

these dimensions concern the functional capabilities citizens should have available to effectively pursue their self-defined wellbeing, according to their own values and priorities. The last dimension refers to the personal achievement of life satisfaction and wellbeing. These dimensions consist as follows. 1) Material living condition, 2) Productive or other main activity, 3) Health, 4) Education, 5) Leisure and social interactions, 6) Economics security and physical safety, 7) Governance and basic rights, 8) Natural and living environment, 9) Overall experience of life. Each element exists independently, however, we focus on both “leisure and social interactions” and “Nature and living environment” dimensions. In “leisure and social interactions” dimension, the individual wellbeing and mutual relationship are described in leisure and social interactions respectively. Participation in culture or sport activities are adopted in the leisure dimensions as the quality of leisure. On the other hand, the frequency of getting together with family and relatives or friend and participation in formal and informal voluntary activities are adopted in social interaction’s dimension. These definitions are limited in personal living environment even if people tend to trip abroad and communicate to foreign people each other. In “natural and living environment” dimension, which has two, “pollution” and “landscape and the building environment” elements, negative and positive aspects are described in each pollution and landscape and the building environment.

2.2 Relation between QOL and Leisure Tourism

The previous studies relating to the relation between QOL and leisure tourism have explored the areas of Wellbeing as the most affected by tourism experiences. Neal, Sirgy and Uysal (2004) developed a model and a measure to capture the effect of tourism services on travelers’ quality of life (QOL). The paper showed that overall life satisfaction is derived from two sources of satisfaction, namely satisfaction with non-leisure life domains and satisfaction with leisure life. Satisfaction with leisure life is derived from satisfaction with leisure experiences that take place at home and satisfaction with travel/tourism experiences. Dolnicar, Yanamandram and Cliff (2012) distinguished between leisure and vacations and extracted the QOL domains in 14 research papers to find the different QOL domains in each activity. They presented empirical evidence for the contribution of vacations to QOL, determined the extent of this contribution and investigated variation in the extent to which vacations contribute to the QOL of the majority of people. Dolnicar, Yanamandram and Cliff (2012) extracted two research papers including environment domain, such as the paper of Lazim and Osman (2009) and Lever (2000). Both researches conducted the local area and indicated the importance of “environment” indicator in the QOL domain. Lazim and Osman (2009) extracted the new Malaysian Quality of Life Index (MQOLI) with 11 QOL components and offered a new way of expressing the quality of life index using a mathematical modelling based on fuzzy sets theory and the proposed weights based on Maslow's theory of hierarchical human needs. Lever (2000) described the QOL as the subjective, multidimensional construct, and investigated the QOL among the inhabitants of Mexico City using the open interview. To analysis these results, the paper applied the factorial analyses and tests of internal consistency. Finally, the paper showed the 19 subdomains of QOL and showed the importance of element of “environment”. These researches showed the leisure tourism affect the wellbeing, and the local environment plays the important role of enhance the satisfaction.

2.3 Definition of proposed e-QOL

We defined the space-oriented e-QOL (Nakashima and Hirano, 2018) to enhance from the individual level to the global level in each related wellbeing dimension. Our e-QOL definition is classified into four levels, individual level, local community level, society or country level and global level as follows.

- Individual level : People lives in the tourist attraction

- Satisfaction and consciousness of the value of the local environment

・ Local community level : Common understanding between individuals and tourists

- Insiders and Outsiders satisfaction from consciousness of value of maintaining the natural environment in a Region

・ Country level : Inbound tourism

- Sharing awareness about the satisfaction of the larger areas and the value of the natural environment

・ Global level : Mutual cultural exchange policy

- Sharing various models of satisfaction in different countries

In this research, we focus on the expansion of feeling of tourists in the circumstance between the individual level and the local community level. We assume the SNS information revels the "Word of Mouth" information in these circumstances meaning the feeling of the visiting tourist.

3. Proposed Feeling Expansion Model

In this section, the restriction of data gathering method will be explained using pre-experiments data, then proposed feeling expansion model and the method will be explained.

3.1 Experimental Setup

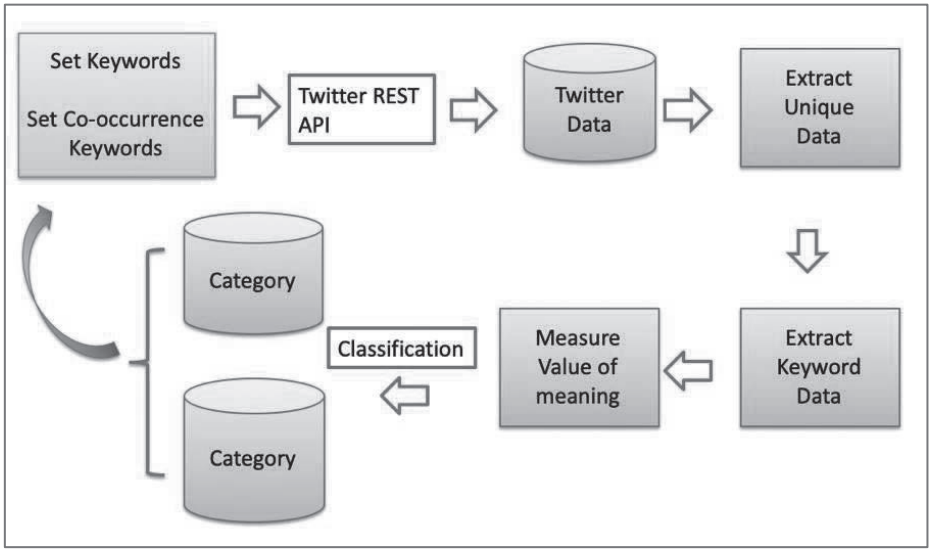

Figure 1. Experiment Environment

Firstly, we will explain the experimental setup and system modules. In these experiments, the system was written in the Python programing language. Figure 1 shows the data flows in these experiments. The Twitter REST API could be gathered the Twitter information written in JSON format and is applied to collect sentences from Twitter dataset in many times with 15 minutes interval requesting multiple-keywords. These gathered Twitter data includes many duplicate sentences due to multiple posts should be eliminated to generate the unique data. The unique Twitter data will be applied using the morphological analysis with dictionary. The nouns, verb and adjective data will be extracted which will show the meaning of Twitter data. Finally, we measured the value of frequency of each word and extracted the category set.

3.2 Pre-experiments

Before establishing the feeing expression model, we conducted multiple pre-experiments to discuss the sampling

policy and check the validity of our system configuration using the real data in Figure 2.

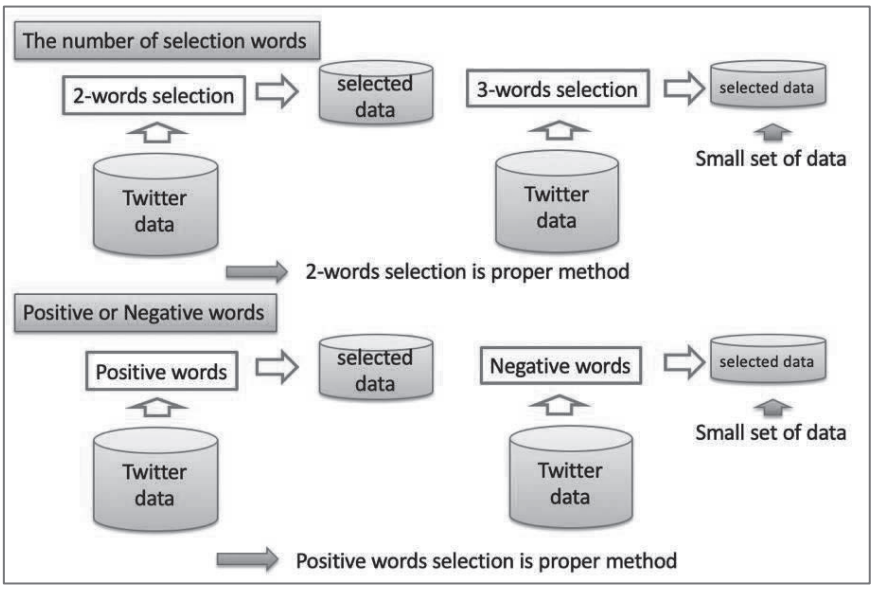

Figure 2. Sampling Policy based on Pre-experiments

Firstly, we conducted to verify the number of different words. We selected two types of methods; two words keyword selection and three words keyword selection. As the results, the volume of three words selection method was very small volume causing the difficulty to aggregate the important information. We decided to use the two words selection method and will extract the new relation. Secondly, adjective words were selected as the expression of personal feelings. In addition, four patterns of experiments whether the adjective or noun word is positive or negative word were executed. As the results of experiments, if the selected word-set includes the negative element, small volume size of tweets are appeared on the direct negative expression. The large volume dataset is required to evaluate the flow of feeling and to find the relation between feeling and object. In this paper, we focus on the flow of feeling in relation to positive keywords.

3.3 Proposed Feeling Expansion Model

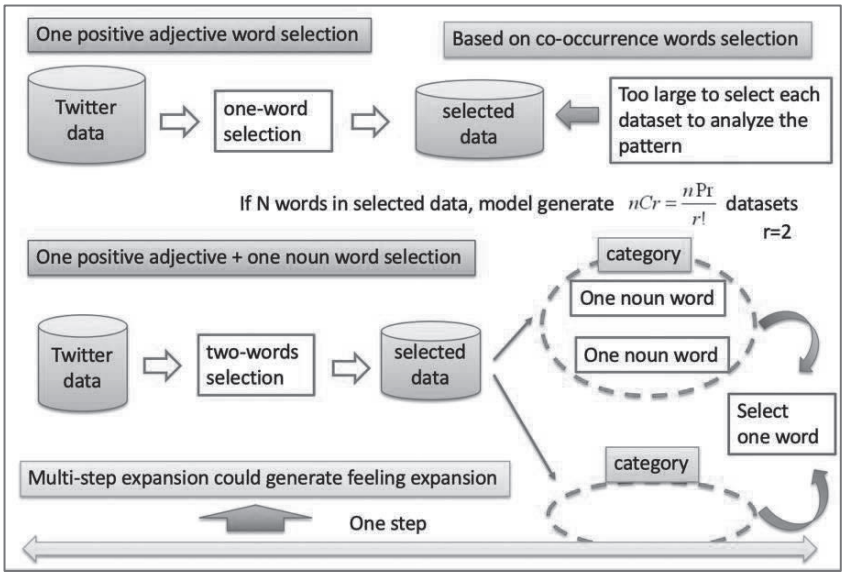

Figure 3. Feeling Expansion Model

We will propose “Stepwise feeling expansion model” to express the flow of feeling in SNS information in Figure 3. This model assumes that tweets data with co-occurred related words has expressed the same feeling, and we analyze the frequency of words representing vocabularies. The one-word oriented tweets data will be selected using feeling explaining adjective or noun from the data source. These tweet dataset, however, would be constructed as a huge volume dataset. If dataset consists of N words, then the number of data set increase the huge number of the N combination of 2. To avoid this combinatorial explosion, we used the filter to extract the co-occurrence relation using two words; one noun word and one feeling expressing words such as adjective or noun word. Then we categorized the extracted data based on the frequently appeared in dataset. We assume this categorized dataset reveals the feeling of the person who tweets and these continuous process means the expansion of feeling. This feeling flow means one-step feeling expansion and could be continued the next-step using the frequently appeared noun or adjective words in the category. Our proposed “stepwise feeling expansion model” are these stepwise feeling expansions based on the co-occurred words.

4. Results of Experiments

From the results of pre-experiments, two words keyword extraction method is effective to expand the feeling concept. In addition, proposed “feeling expansion model” will gather the concrete feeling of person using the noun + positive adjective or noun word. In this section, we show and classify the category in relation to the feeling for “leisure tourism”. In this experiment, “leisure tourism” is set as the main keyword and the six positive adjective words; nice, good, happy, pleasure, great and interesting are set as the additional feeling word. We conducted these experiments for one week from November 10th to 16th in 2018, and gathered the tweets data with 111 thousand lines.

We analyzed the feeling expansion in each case and gathered the frequently appeared words. The word of “good” or “nice” induced the concept of space expression such as “Kyoto” or some famous places for leisure tourism. These words are supposed to be tightly connected to the individual famous place. The word of “happy” induced the concept of time expression such as “Today”. The “happy” feeling more connects to the concept of time than the concept of place. These results show that the positive expression based on “leisure tourism” could generate the relationship between adjective word and the time and space concept. The word of “pleasure” induced the long period time concept such as “autumn leaves” or “weather”. The word of “pleasure” generated the long term satisfaction to the concrete object. The word of “great” induced the words relating meal such as “cuisine” and “delicious”. We suppose the feeling of “great” would be frequently commented at the eating places and would connect to the real objects. The word of “interesting” induced the remarkable object such as guide board. These results show that the positive adjective words could be used in the different situation and connect to the time and space concept.

5. Conclusion and Future Works

In this research, we introduced the e-QOL concept relating to the leisure tourism and proposed the stepwise feeling expansion model to get the information of “Word of Mouth”. We implemented the extraction system and executed our system to get the information and evaluate proposed model. As the experimental results, our model could capture the concept of feeling based on the SNS information and the positive adjective words could represent person’s wellbeing feeling over the time and space concept in especially the field of environment.

We could define two-way resolution approach; the top down analysis and bottom up analysis in Figure 4. The top-down analysis stands on the theoretical analysis based on the theoretical research such as the field with

"civilization" as the keywords. In this analysis, the system extracts the concept of words using natural language processing (NLP) and the technique of machine learning processing used in Artificial Intelligent field. NLP conducts the morphological analysis then executes the syntax analysis using thesaurus. On the other hand, our current approach is defined as the bottom up analysis based on the tweets data shown in Figure 4. We suppose the twitter information consists of honest information and finally compare the results of top-down analysis and of bottom-up analysis. This comparison will generate the ideal and realistic matters. We will finally verify the exact concept of e-QOL and establish the abstraction of feeling of wellbeing. We will continue to conduct the quantitative analysis and join into the qualitative analysis.

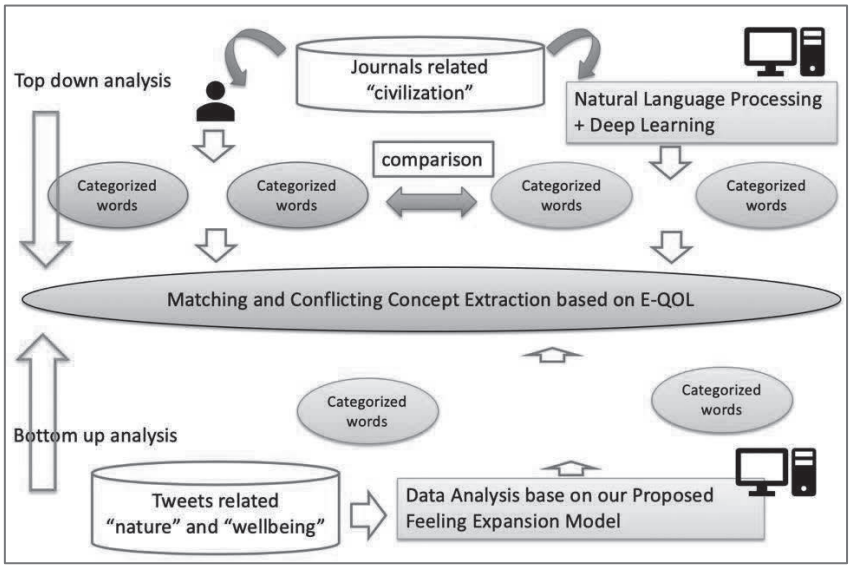

Figure 4. Future Cognitive System Configuration

References

Dolnicar, S., Yanamandram, V. & Cliff, K. (2012), The contribution of vacations to quality of life. *Annals of Tourism Research*, 39 (1), 59-83.

Lazim , M. Abdullah and Osman, M. Tap Abu (2009). A New Malaysian Quality of Life Index Based on Fuzzy Sets and Hierarchical Needs, *Social Indicators Research*, 94, 499-508.

Lever, Joaquina Palomar (2000), The Development of an Instrument to Measure Quality of Life in Mexico City, *Social Indicators Research*, 50, 187-208.

Nakashima, Takuo and Hirano, Yoichi (2018), The Relation Between Human Activities and the Natural Environment - An Essay on the Introduction of Environment-Related QOL-, *Proc. of the 3rd Dialogue between Civilizations International Symposium*, pp.6-16.

Neal, Janet D., Sirgy, M., Joseph and Uysal, Muzaffer (2004), Measuring the Effect of Tourism Services on Travelers' Quality of Life: Further Validation, *Social Indicators Research*, Volume 69, Issue 3, pp 243–277.

Smith, Melanie Kay and Diekmann, Anya. (2017), Tourism and wellbeing, *Annals of tourism research*, vol. 66, pp.1-13.

Eurostat online publications (2019). https://ec.europa.eu/eurostat/statistics-explained/index.php/quality_of_life_indicators.

United Nations (2013), https://www.un.org/millenniumgoals/bkgd.shtml.

United Nations (2018), Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. https://unstats.un.org/sdgs/indicators/Global%20indicator%20Framework%20after%20refinement _ Eng.pdf.