Analysis of Travel Blogs Posted in New Zealand: Geographical Distribution, National Parks and Movie Locations

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***Abstract*—By means of mobile apps travellers are able to share their experiences during trips. Thus, lots of travel blogs arise with different reports that contain lots of information about a travel destination. This information is of interest for other travellers and for travel destinations. Travel report posted in New Zealand are used to analyse the behaviour of travellers. The analysis is carried out by means of NoSQL technologies. Because the analysed travel reports are assigned to a degree of longitude and latitude, a representation of all travel reports on a map of New Zealand can be derived, which allows to analyse the geographical distribution of the travel reports across the country. In addition, a text search for words which describe places of interest is combined with the visualization of travel reports. The application of this approach to travel reports about New Zealand allows to assign summarized travel reports to national parks and movie locations.**

***Index Terms*—smart tourism, travel blogs, NoSQL, analytics, New Zealand, movie locations**

I. Introduction

A. Smart Tourism and Travel Blogs

In opposite to e-Tourism where travellers prepare and follow up their trips using websites in order to get, share and process information, they act within Smart Tourism during their trip [1]. Smart tourism is a social phenomenon arising from the convergence of information and communication technologies (ICT) with the tourism experience [2], [3]. ICT systems enable travellers to share their travel experiences in order to assist other travellers in their decision making process to revive and reinforce their travel experiences [1], [4]. Travel blogs are sources of information which contain tourist experiences. They represent "personal online diaries" with individual blog entries, that are related to a planned, a current or a past travel [5]-[9]. Travel blogs consist of stories which are enriched with photos and videos and show travel experiences at first hand.

B. User-generated Content and Analytics

User-generated content (UGC) in tourism is considered to be a good source of information for National Tourism Organizations (NTOs), Destination Marketing Organizations (DMOs) and future travelers due to the facts, that it consists of freely expressed opinions. A quantitative analysis of UGC may be useful on one side for NTOs in order to improve their policies for branding and positioning. On the other side it can be useful for DMOs in order to improve the promotion of products or services [10]. The use of analytics in travel and tourism allows to understand travelers' sentiments and preferences using online user-generated content [11].

II. Methodology

A. Travel Blogs and Travel Blog Platform

Travel blogs can be shared with the general public or with certain persons by means of a website. Within the scope of this study the travel blog platform traveloca.com was used. At the end of 2017 it contained 68.799 travel reports with 316.620 photos or videos in 59 languages over all five continents. In order to publish travel experiences during trips, travel blog apps for iOS and Android smartphones and tablet computers are available [12].

B. Analysis of Travel Blogs Using NoSQL Technigues

Travel reports about New Zealand were investigated on basis of JSON-documents. For this purpose, the travel report data had been imported in the NoSQL database MongoDB, which offers an Aggregation Framework to analyze data [13]. In order to visualize the data by means of a map a geo-based analysis has been carried out. The representation within a map was performed by means of an in-house development in JavaScript and the Google maps API [14]. Data of the New Zealand Government have been included in a separate layer of a map to assign travel reports to places of interest [15].

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III. New Zealand as Destination for Travel Bloggers

A. New Zealand as Travel Destination

New Zealand reports a number of 3.5 Million visitor arrivals in one year. The percental increase of visitor growth is the second largest for German tourists [16]. New Zealand is for young Germans a very interesting destination. According to a survey with 2234 persons with an average age of 24 years, New Zealand is with a quote of 24, 3% the second interesting destination for a work and travel stay [17].

B. Travel Reports about New Zealand

A travel blog at traveloca.com consists of travel reports, which are assigned to different travel stops. The travel stops are visualized on a map showing the travel route. For every blog the distance of the travel route, the number of stops, the number of travel reports and the number of persons are shown, which follow the blog. 2165 travel reports had been created about New Zealand in 8 languages until the end of 2017, where German, English, French and Dutch are the most popular languages.

IV. Analytics of Travel Blogs: Findings

A. Temporal Development Seasonal Distribution

The number of travel reports per year are shown in Fig. 1 starting from the year 2010 with 59 reports at the beginning. Since then, the number of travel reports has increased strongly reaching the maximum value in the year 2016 with a number of 563 reports. In the year 2017 515 travel reports were published. The strong temporal increase can be explained by a continuous travel activity increase to New Zealand, which agrees to the statistical data showing a continuous increase of the number of visitors in general [18]. Fig. 1 shows a strong increase in travel reports starting 2013, which may be related to the advertising campaign called "100% Middle-earth, 100% Pure New Zealand" [19]. However, the increase of the number of travel reports has also to be seen as consequence of the increase blogger numbers within the travel community at traveloca.com as a whole.

Figure 1. Temporal development of travel reports since 2010

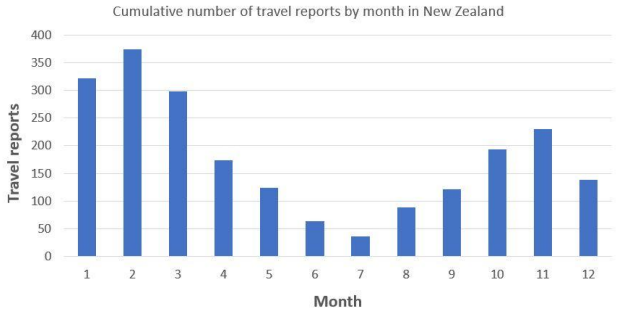

Figure 2. Monthly distribution of travel reports within the years 2010 to 2017

In Fig. 2 the number of travel reports, which had been published within the years 2010 to 2017 are shown as a function of the month, where they were published. A wavelike seasonal distribution is shown with high number of reports with a maximum value at February. The number of reports decrease continuously until a minimum value is reached in July. In August the number of reports start to increase clearly with a continuous increase until November. The number of published travel reports show a seasonal distribution, which can be explained by a strong travel activity in New Zealand's summer and a weak travel activity in New Zealand's winter.

B. Language of Travel Reports

Fig. 3 shows the number of travel reports according to the distribution of different languages. About 78% of all reports were written in German language. 14 % of all reports were created in English, 4 % in French and 2 % in Dutch language. In addition, further travel reports about New Zealand were written in Romanian, Spanish, Russian and Czech language.

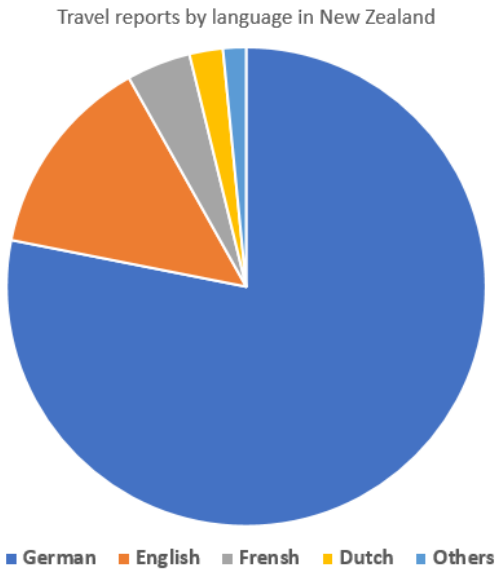

Figure 3. Distribution of travel reports to different languages

C. Distribution of Travel Reports

The visualization of all travel reports across the country New Zealand is shown in Fig. 4 in form of a heat map. Areas with the highest number of travel reports are shown in red. Yellow areas represent a middle number of reports. Green areas indicate, that in these areas travel reports are published with minor numbers. A lot of reports were published in Auckland. A reason is, that a lot of trips to New Zealand both start and end at Auckland Airport. As a consequence, most of the travellers stay at Auckland for some days. Also Wellington, Christchurch and Queenstown are popular destinations, because they are part of a round trip across the northern and southern part of New Zealand.

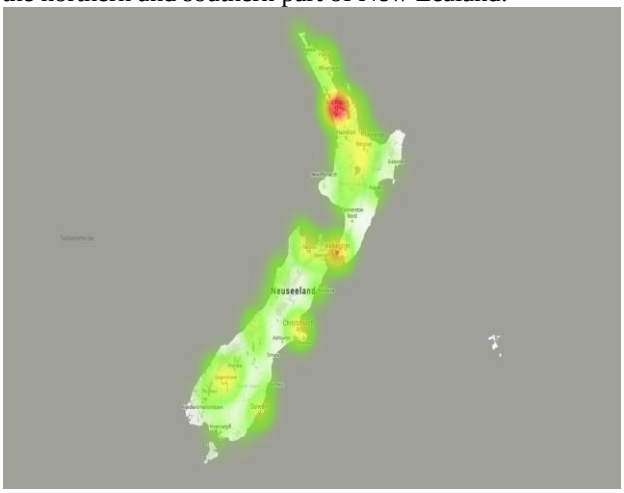

Figure 4. Geographical distribution of travel reports over New Zealand (map data © 2018 Google)

D. Assignment of Travel Reports to Places of Interest

In order to allow an assignment of the travel reports to additional places of interest, the reports are restricted to German language. Thus, a geographical analysis can be combined with a text search in German language. A restriction to travel reports which contain the word "Nationalpark" (national park in English) delivers the following heat map (Fig. 5).

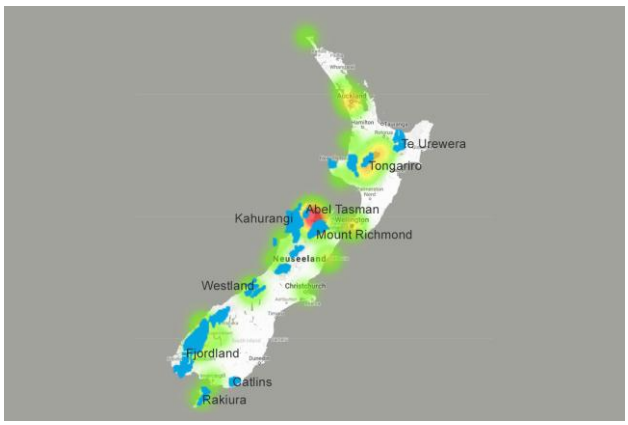

Figure 5. Geographical distribution of travel reports, which contain the word "Nationalpark" (map data © 2018 Google)

The blue areas contain 14 national parks of New Zealand. For the national parks, which are located near the areas with the highest number of travel reports, the names are included in the heat map. Fig. 5 delivers a very good agreement between the locations, where the travel reports were published, and the position of the national parks. Abel "Tasman", "Mount Richmond" and also "Tongariro" are national parks with the highest number of travel reports. Obviously, they are very popular to German travel bloggers. For national parks „Te Urewera" and „Catlins" there are only a few travel reports. These national parks do not enjoy great popularity among German travelers. In Fig. 6 a heat map is represented for all travel reports in German language which contain the expressions "Der Hobbit" or "Herr der Ringe" ("Lords of the Rings"). In this map the blue areas show the locations, where the movies "Der Hobbit" or "Herr der Ringe" had been recorded. Again, a very good agreement between the locations, where the travel reports were published, and the position of film locations is obtained.

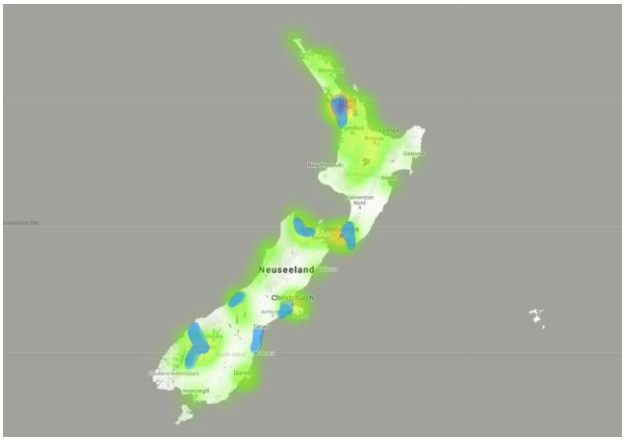

Figure 6. Geographical distribution of travel reports, which contain the expressions "Der Hobbit" or "Herr der Ringe" (map data © 2018 Google)

Fig. 6 also shows, that the area especially around Auckland is very popular for travelers who are interested in movies like "Hobbit" or "The Lord of the Rings". "The Lord of the Rings" is an example how movies can increase the number of tourists at a destination they portrayed [20].

V. Summary

User-generated content in terms of travel blogs of a travel blog platform has been analyzed to investigate the behavior of travelers to New Zealand. For this purpose, NoSQL technologies were used. The temporal distribution of travel reports confirms the increasing interest tourists show to New Zealand. A geographical visualization of travel reports across New Zealand has been presented. A combined analysis of geographical distribution and text search allows to assign travel reports to places of interests. An assignment to national parks and locations of movies has been carried out successfully for travel reports created in German language.

REFERENCES

[1] U. Gretzel, M. Sigala, Z. Xiang and C. Koo, "Smart tourism. Foundations and developments," *Electronic Markets*, vol. 25, pp. 179–188, June 2015.

[2] W. C. Hunter, N. Chung, U. Gretzel, and C. Koo, "Constructivist research in smart tourism," *Asia Pacific Journal of Information Systems*, vol. 25, no. 1, pp. 105–120, March 2015.

[3] C. Koo, J. Park, and J. N. Lee, "Smart tourism: Traveler, business, and organizational perspectives," *Information and Management*, vol. 54, pp. 683-836, September 2017.

[4] J. Lee, H. Lee, N. Chung, and C. Koo, "An integrative model of the pursuit of happiness and the role of smart Tourism technology: A case of international tourists in seoul," in *Information and Communication Technologies in Tourism*, 2017, R. Schegg, B. Stangl, Eds., Springer, Cham, 2017, pp 173-186

[5] C. Bosangit, S. McCabe, and S. Hibbert, "What is told in travel blogs? Exploring travel blogs for consumer narrative analysis," in *Information and Communication Technologies in Tourism 2009. Proceedings of the International Conference in Amsterdam*, R. Law, U. Gretzel, W. Höpken, Eds., Springer, Wien, New York, 2009, pp. 61–71.

[6] S. Puhringer and A. Taylor, "A practitioner's report on blogs as potential sources for destination marketing intelligence," *Journal of Vacation Marketing*, vol. 14, pp. 177–187, April 2008

[7] H. Nanba, H. Taguma, T. Ozaki, D. Kobayashi, A. Ishino, and T. Takezawa, "Automatic compilation of travel information from automatically identified travel blogs," in *ACL Short '09 Proceedings of the ACL -IJCNLP 2009 Conference Short Papers*, Singapore, pp 205–208

[8] M. Y. Wu and P. L. Pearce, "Tourism blogging motivations: why do Chinese tourists create little 'Lonely Planets?", *Journal of Travel Research*, vol. 55, pp. 537–549, October 2016

[9] E. Haris and K. H. Gan, "Mining graphs from travel blogs: a review in the context of tour planning," *Information Technology and Tourism*, vol. 17, pp 429–453, December 2017

[10] E. Marine-Roig, S. A. Clave, "A Method for analysing large-Scale UGC data for tourism: Application to the case of catalonia," in *Information and Communication Technologies in Tourism 2015*, Tussyadiah, I.; Inversini, A., Eds. Springer International Publishing AG Switzerland, 2015, pp. 3–17.

[11] Z. Xiang, D. R. Fesenmaier, Eds. *Analytics in Smart Tourism Design*, Springer International Publishing Switzerland, 2017

[12] T. Barton, M. Graf, "Architektur, funktionen und user interface einer cloud-basierten anwendung für Reiseblogging," HMD Praxis der Wirtschaftsinformatik, vol. 53, no. 5, pp. 712 – 720, 2016.

[13] K. Banker, P. Bakkum, S. Verch, D. Garrett, T. Hawkins "MongoDB in action," Manning, Shelter Island NY, 2016

[14] Y. Zhu, "Introducing google chart tools and google maps API in data visualization courses," *IEEE Computer Graphics and Applications*, vol. 32, pp. 6 – 9, November 2012

[15] New Zealand Government: New Zealand's national parks contain some of our most treasured wilderness areas. http://www.doc.govt.nz/parks-and-recreation/places-to-go/national-parks/

[16] Tourism Industry Aotearoa. (January 2018). "New Zealand Tourism State of the Industry 2017". [Online]. Available: https://tia.org.nz/assets/Uploads/State-of-the-Tourism-Industry-2017-final.pdf

[17] Survey Work and Travel (12.09.2017). [Online]. Available: https://www.presseportal.de/pm/116464/3733050?utm_source=digest&utm_medium=email&utm_campaign=push.

[18] World Tourism Organisation "UNWTO Tourism Highlights, 2017 Edition", [Online]. Available: https://www.e-unwto.org/doi/pdf/10.18111/9789284419029

[19] Tourism New Zealand (22.08.2013) New 100% Middle-earth, 100% Pure New Zealand campaign highlights special interest experiences. [Online]. Available: https://www.tourismnewzealand.com/news/new-100-middle-earth-100-pure-new-zealand-campaign-highlights-special-interest-experiences/

[20] Y. Kork "How film tourists experience destinations," in *Tourism and Culture in the Age of Innovation*, V. Katsoni, A. Stratigea, Eds., Springer International Publishing Switzerland, 2016, pp. 145 – 156.

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