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ASSESSING THE POTENTIAL OF SOCIAL MEDIA TO REFLECT GLOBAL TOURISM

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Abstract

Increasingly, people use Social Media to relate their experiences and thoughts regarding travel and tourism. Others use this information to plan better and make better decisions in the context of travel and tourism. Several studies have investigated trust in, contribution to, and consumption of tourism-related Social Media and its impact on people's behavior and decisions. However, it is largely unclear how and to what extent Social Media data on travel and tourism actually reflect offline travel and tourism activities. We compared data on visitors per country from the United Nations World Tourism Organization to travel reviews from a virtual travel community from 2000 to 2009. We found them to correlate quite strongly, which indicates that travel and tourism are quite well reflected in Social Media, at least at the aggregate level of countries. This finding may have implications for research on tourism-related Social Media as well as for how Social Media reflects other offline phenomena besides tourism. Comparability of both data sources, limitations of the study, and opportunities for further research are discussed.

Keywords: Social Media, Virtual Travel Community, online tourism, online travel review, UNWTO.

1 Introduction

In the course of the development of Social Media, certain services and websites have been designed for and used in the context of travel and tourism (T&T) (Buhalis and Law, 2008). Acknowledging different interpretations, Schoder, Gloor et al. (2013) define “Social Media” as “a generic term for social interactions built on a multitude of digital media and technologies, which allow users to create and share content and to act collaboratively”. In the case of T&T, this includes, besides others, personal blogs, review websites, and bulletin boards. T&T-related Social Media and their relation to actual T&T – i.e., offline aspects of T&T such as activities, experiences, and attitudes which have already existed before the development of Social Media – have increasingly become topics of research. However, the questions of how and to what extent actual T&T are accurately reflected in T&T-related Social Media have received far less attention. While the motivations for participation and content creation in T&T-related Social Media as well as the conditions and impact of its consumption on T&T behavior have been studied, the results of the creation process have not been checked for their consistency with actual T&T. This is important because they concern the data sources from which users of T&T-related Social Media and researchers draw. Our analysis seeks to help close this gap in the research by analyzing the degree to which T&T-related Social Media accurately reflects the geographical distribution of global T&T. Specifically, we compare the geographical distribution of travel reviews from a Virtual Travel Community (VTC) to official data on global T&T distribution from the United Nations World Tourism Organization (UNWTO) for a ten-year period from 2000 to 2009. VTC websites integrate functionalities of different Social Media services into a single website, for example reviewing facilities, sharing multimedia content, posting to the public, and maintaining a virtual traveler profile. Thus, VTCs respond to the travelers’ fundamental needs (Wang, Yu et al., 2002) such as information, communication, sharing and receiving of experiences and recommendations, and connecting to like-minded travelers, and are regarded as increasingly important in T&T (Buhalis and Law, 2008).

The remainder of this article is structured as follows. Section 2 outlines the relation of this study to three main topics in T&T-related Social Media research, namely trust, contribution of content, and consumption of information. Section 3 describes both data sources we used for comparison, differences that might affect results, and the actual approach we took to compare the data. Section 4 presents the results of comparing both data sources. We conclude in Section 5 with a discussion of the results, limitations of the study, and possibilities to further this research.

2 Literature Review

This study relates to three topics in the research on T&T-related Social Media. First, trust is regarded as being important for the usage of an electronic service, although there are different notions of what trust is and what its antecedents are (Beldad, Jong et al., 2010). Fotis, Buhalis et al. (2011) found that people trust user-generated content more than travel agents, official tourism websites, and mass media. Travelers perceive T&T-related user-generated content to be more trustworthy than marketing content in terms of informativeness and integrity, but less trustworthy than marketing and editorial content when it comes to ability and benevolence (Dickinger, 2011). Lower levels of trust in T&T-related Social Media might also be due to inaccuracies in the reflection of actual T&T in Social Media.

Second, participation in and contribution to Social Media, specifically VTCs, depends on people’s individual motivations. Wang and Fesenmaier (2004) found that hedonic and social needs are important reasons for participation in a VTC. The level of contribution depends on the level of participation as well as on perceived instrumental, efficacy, and expectancy incentives. Similarly, Yoo and Gretzel (2011) found that altruistic and hedonic benefits motivate the creators of online T&T-related content, while non-creators are inhibited mainly by lack of time and interest. The question

remains whether the Social Media representation of actual T&T, thus resulting from individual behavior following certain motives and traits, is still consistent with actual T&T on a larger scale.

Lastly, T&T-related Social Media, and especially online travel reviews, are an important source of information for people when making choices about and planning tourism trips (Xiang and Gretzel, 2010; Parra-López, Bulchand-Gidumal et al., 2011; Fotis, Buhalis et al., 2011) and have an effect on attitudes regarding destinations (Vermeulen and Seegers, 2009) and actual bookings (Ye, Law et al., 2009; Ye, Law et al., 2011). Since T&T-related Social Media content is an influential source to T&T decisions, one would like to know whether and to what extent it accurately reflects actual T&T.

3 Data Sources and Research Method

The rather abstract question whether and to what extent Social Media data reflect actual global T&T may be specified in different ways. In this study, we investigate the distribution of travelers per year and country. The UNWTO’s “Compendium of Tourism Statistics” provides a benchmark of actual global T&T. A VTC provides our Social Media data on global T&T.

3.1 Data Sources

The UNWTO’s annual “Compendium of Tourism Statistics” includes data on inbound, outbound, and domestic T&T, as well as on T&T industries, employment, and complementary indicators for more than 200 countries (United Nations World Tourism Organization, 2012). The UNWTO kindly provided us with an electronic copy of the compendium’s data covering the period 1995 to 2010 (as of 04/04/2012). Data on global T&T are gathered according to several measures. We focused our analysis on the most general of these: the total number for inbound and domestic T&T per year and country. Inbound T&T is measured by “arrivals,” which “measure the flows of international visitors to the country of reference: each arrival corresponds to one inbound tourism trip.” (United Nations World Tourism Organization, 2012). Domestic T&T is measured by the number of “trips,” defined as “activities of a resident visitor within the country of reference” (United Nations World Tourism Organization, 2012). The total number of inbound and outbound visitors is broken down again, according to the length of the stay, into “overnight visitors” and “same-day visitors,” respectively. The total amount of T&T activity within a certain country can be derived by totaling the measures for inbound and domestic T&T. Table 1 is an overview of these six UNWTO measures and three derived measures.

We decided to use travel reviews from a VTC to measure global T&T as reflected in Social Media. Travel reviews clearly reference a specific country and also include some date, both prerequisites for comparison with UNWTO measures. We used a large international VTC which is available in multiple languages, including Chinese, in order to cover travelers and tourists worldwide. In early 2010, we collected data on reviews per year for 244 countries. Only reviews which indicated an exact date of stay were used for this analysis.

Length of Stay	Visitors’ Origin		Total T&T
	Inbound T&T	Domestic T&T	
Total	1.1 Arrivals – Total	2.1 Trips – Total	D.1 = 1.1 + 2.1
Overnight visitors	1.2 Arrivals – Overnight visitors	2.2 Trips – Overnight visitors	D.2 = 1.2 + 2.2
Same-day visitors	1.3 Arrivals – Same-day visitors	2.3 Trips – Same-day visitors	D.3 = 1.3 + 2.3

Table 1. Original and derived measures of UNWTO.

3.2 Comparability of Data Sources

Data from UNWTO and the VTC are compatible according to the geographical and temporal data structure. But there are differences between the two data sources of which one must be aware when comparing them and that could account for differences in the measurements.

UNWTO data on inbound and domestic T&T are collected and reported by national authorities of the participating countries (United Nations World Tourism Organization, 2012). Thus, one can expect global T&T to be represented quite exhaustively and representatively when looking at UNWTO data. On the contrary, online travel reviews are the product of voluntary, individual action that is not bound to offline activities in the same firm way as, for example, the systematic counting of arrivals at national borders. Moreover, global proportionality of data between countries may be affected by an unequal global distribution of the VTC's user group. For instance, if the VTC enjoyed more frequent use in some countries and less in others, the former countries' T&T preferences would be systematically overrepresented (due to more reviews from these countries) compared to actual T&T and, presumably, to UNWTO data. What applies to different levels of usage of the VTC in different countries might also apply to different levels of internet infrastructure availability. These differences can be summarized as sampling differences.

In addition to sampling differences, there are also conceptual differences. The units of measurement of UNWTO data are arrivals of visitors at national borders (inbound) and trips of residents in the respective country (domestic). Thus, a given individual will be counted each time he visits a foreign country or travels within his country of residence. For the VTC, single travel reviews are measured that refer to certain facilities. A visit to a foreign or the home country may be reflected in zero, one, or multiple reviews. Moreover, if people travel in groups (e.g., families), UNWTO data would count each group member individually whereas it is likely that only one group member would write a review.

The distinction between sampling and conceptual differences is important. Both may lead to inconsistencies between the two data sources, but the inconsistencies due to sampling differences are just what we are looking for when assessing the accuracy of the reflection of actual T&T in Social Media. If they are small, T&T-related Social Media are a good representation of actual T&T. Conceptual differences could be accounted for in some ways. However, we opted not to do so in order to assess the goodness-of-fit of raw Social Media data on T&T and data on actual T&T.

3.3 Comparison of Data on Global Tourism

UNWTO measures on global T&T are given as the number of visits per year and country. To compare online travel reviews to these data, we aggregated the number of reviews according to the country of the reviewed facility and the year of the stay. Online reviews were available from 2000 to 2009, so our analysis was limited to this ten-year period. The countries in both data sets were matched by their names. This resulted in a total of 210 countries for which both data sets provided some data. The author of an online travel review cannot always be assigned a country of origin. Hence, one cannot always distinguish whether a travel review indicates a case of foreign or domestic tourism. The measures best suited for comparison with online travel reviews would thus be the derived measures (D.1 to D.3). They comprise both foreign as well as domestic tourism. Unfortunately, UNWTO data on the six measures described above were incomplete because some measures had not been reported or even not gathered by the respective national authorities. Table 2 shows the number of countries for which data was provided by each of the six original UNWTO measures and the three derived measures. Data coverage was much more complete for inbound (foreign) T&T than for domestic T&T and, consequently, also more complete than the derived measures. Hence, we also compared the measures of inbound T&T to online travel review data to assess whether online travel reviews reflect global T&T, that is, T&T for a large number of countries. Nevertheless, one would expect the results of the comparison to the derived measures to be better because they are conceptually more similar.

Measure	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
COUNTRIES COVERED BY UNWTO MEASURES										
Inbound T&T										
1.1 Total	124	127	120	123	122	124	127	127	126	121
1.2 Overnight	189	190	184	184	185	189	188	189	182	178
1.3 Same-day	103	107	103	104	106	110	114	114	111	108
Domestic T&T										
2.1 Total	1	1	1	3	4	5	13	15	18	22
2.2 Overnight	3	3	4	7	9	12	19	21	27	30
2.3 Same-day	1	1	1	3	4	3	9	11	14	14
Derived										
D.1 = 1.1 + 2.1	1	1	1	2	3	4	9	13	15	18
D.2 = 1.2 + 2.2	3	3	4	6	8	11	17	19	24	27
D.3 = 1.3 + 2.3	1	1	1	2	3	2	6	10	10	10
VIRTUAL TRAVEL COMMUNITY (VTC)										
Countries covered	82	91	120	160	175	194	203	208	208	209
New reviews	1,082	4,778	28,845	135k	275k	448k	706k	1,340k	1,988k	2,643k
... with date of stay	786	1,186	3,636	16,365	63,711	314k	537k	876k	1,107k	1,774k

Table 2. Data coverage for countries in UNWTO data set as well as VTC.

Table 2 also lists the number of countries for which the VTC could provide at least one review with an exact date of stay in a certain year. As can be seen, this number more than doubles within the ten-year period. From 2005 to 2009, the VTC covered even more countries than the selected UNWTO measures. For the case of online reviews, one cannot be sure whether no reviews for a country in a given year indicate a missing value (“null”) or no tourism in that country (“0”). Since we wanted to assess whether Social Media accurately represents global T&T, we decided to treat no reviews as no T&T. The perspective taken here is that if one would have to rely exclusively on Social Media data – in this case, online travel reviews – to assess global T&T, how much would that person’s perception differ from actual T&T (in this case, the UNWTO)? Consequently, the VTC can provide data for each of the 210 countries and every year – although it may often be zero. Table 2 also shows the total number of reviews for every year provided by the VTC, and the number of reviews with an exact date of stay, used for this study.

To compare UNWTO to travel review data on global T&T, we calculated Pearson correlations for travel review data, on the one hand (missing values treated as “0”), and UNWTO measures D.1 to D.3 and 1.1 to 1.3, on the other hand (missing values left out pairwise). Since UNWTO as well as online travel review data on countries differ very strongly in the absolute numbers of visitors, we also calculated correlations using logarithmic scales for both data sets. Further, scatter plots of every pair of UNWTO measure (D.1 to D.3; 1.1 to 1.3) and online travel review measure were checked.

4 Results

Table 3 shows the results of correlating UNWTO measures on global T&T with online travel reviews over a ten-year period. Values for the derived measures can be reasonably evaluated only from 2006 on because prior UNWTO data on domestic T&T are too sparse. The coefficients for the derived measures from 2006 to 2009 indicate that, for the relatively small group of countries that report numbers on inbound as well as domestic T&T, these measures are highly correlated with the number of online travel reviews regarding these countries. This is confirmed by the scatter plots for online travel reviews and UNWTO derived measures. Correlations could also be higher because the countries in the smaller group are more similar and not because the derived measures are conceptually better suited. However, this is unlikely as, for example, the group of countries with the highest correlation for a derived measure in 2009 (D.3) consists of Canada, France, Kazakhstan, Latvia, Lithuania, Malaysia, New Zealand, Saudi Arabia, Spain, and Venezuela, which can be regarded as quite diverse.

UNWTO measure	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inbound T&T										
1.1 Total	.481	.522	.486	.473	.392	.386	.663	.646	.664	.649
log ₁₀	.606	.628	.590	.592	.564	.592	.676	.653	.640	.649
1.2 Overnight	.631	.645	.594	.552	.538	.531	.577	.597	.624	.648
log ₁₀	.685	.708	.687	.701	.717	.732	.791	.795	.795	.807
1.3 Same-day	.337	.413	.395	.392	.299	.288	.734	.709	.704	.658
log ₁₀	.478	.553	.441	.382	.407	.421	.568	.547	.531	.513
Derived										
D.1 = 1.1 + 2.1	n/a	n/a	n/a	1.000	.991	-.748	.951	.951	.973	.437
log ₁₀	n/a	n/a	n/a	1.000	.498	-.991	.643	.766	.843	.819
D.2 = 1.2 + 2.2	.997	.997	.637	.982	.917	.891	.861	.994	.993	.940
log ₁₀	1.000	1.000	.845	.670	.468	.726	.735	.830	.873	.859
D.3 = 1.3 + 2.3	n/a	n/a	n/a	1.000	.998	1.000	.996	.986	.998	.983
log ₁₀	n/a	n/a	n/a	1.000	.806	1.000	.888	.898	.933	.895

Table 3. Correlations between UNWTO (derived) measures and online travel reviews.

The drop of the correlation for D.1 in 2009 can be explained by the fact that this was the first year China reported total domestic T&T (2.1) to the UNWTO. This value was much larger than the number of online travel reviews for China in 2009 – compared to the relation of UNWTO data and travel review data for other countries. That indicates that (for 2009, but presumably also before) Chinese people wrote by far fewer travel reviews when traveling in their home country than did people in other countries – at least to the VTC used in this analysis.

The results for the measures of inbound tourism for a much larger group of countries indicate that even if both data sources differ with respect to whether they include domestic T&T, there are strong correlations between UNWTO measures and online travel reviews.

5 Discussion

For those countries that provided appropriate data, we found very strong correlations between the number of visitors (both foreign and domestic) per year and the number of reviews from a VTC. We also have seen that measures on global T&T in Social Media and measures by official authorities have a weaker (but still strong) correlation if we compare reviews to official measures of inbound T&T alone. Put in a different way, it can be stated that for those countries that do not provide measurements of domestic T&T, online travel reviews can probably give an accurate assessment of total T&T.

This study contributes to the understanding of the interplay of actual T&T and T&T-related Social Media. With respect to the research on trust, the results indicate that trust in T&T-related Social Media is justified by a quite good reflection of actual T&T. However, further research could capture the (perceived) availability or coverage of information as a potential antecedent of trust in Social Media more explicitly. Regarding the research on contribution to T&T-related Social Media, our findings indicate that the individual contributions of many travelers result in a good Social Media representation of global T&T distribution on a larger scale. This opens the possibility to gather somewhat representative information from Social Media, and is important for researchers using similar Social Media content to answer other research questions. However, further measures on different dimensions of representativeness should be evaluated. The good representation of global T&T distribution also has implications for the impact of Social Media on individual planning and decision making in T&T. While by and large T&T-related Social Media provide a good impression of actual T&T, systematic avoidance of certain travel destinations by travelers might just be due to the fact that these destinations are relatively underrepresented in Social Media.

The comparison of the better-suited derived measures D.1 to D.3 could be carried out only for a comparatively small set of countries because of limited data from the UNWTO. Despite this

limitation, the results were very promising. Using a single VTC creates the risk of systematically underestimating travel in and from some countries in which other VTCs are used more often. Both problems of data coverage could be overcome by adding other sources of data on actual global T&T and by combining data from multiple VTCs. This could, though, increase the problems that arise from differences between multiple data sources, which we discussed above. Techniques to account for these differences should be evaluated.

Are VTC data and UNWTO data correlated because the former are a reflection of the latter or because the latter have been influenced by the former? Both may be true. Other studies show that online travel reviews do have an impact on travel decisions (Vermeulen and Seegers, 2009) and will, therefore, affect data on actual T&T. However, T&T is much older than Social Media, and people still rely on other online and offline sources of information to help them make travel decisions (Xiang and Gretzel, 2010).

In addition, our finding that Social Media data and official data are correlated with respect to T&T may have implications for other offline phenomena and other uses of Social Media. This is a topic worthy of further research.

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