



**University of
Zurich**^{UZH}

**Zurich Open Repository and
Archive**

University of Zurich
Main Library
Strickhofstrasse 39
CH-8057 Zurich
www.zora.uzh.ch

Year: 2005

How Tourism Communities can change travel information quality

Schwabe, Gerhard ; Prestipino, Marco

Abstract: Largely ignored by research, online travel communities have already changed the travel behavior of the younger generation. They retrieve and exchange information prior to travelling and share their experiences afterwards. This paper presents some empirical evidence that the quality of the information retrieved justifies their behavior. The evidence is embedded in a larger framework and a set of hypotheses that establish a relationship between the choice of a travel information system and attributes of information quality. The paper argues that relevant attributes of information quality are timeliness, completeness, structure and personalization. Three studies support our proposition that a traditional discussion-based online tourism community provides more timely, more complete and more personalized information than a commercial guidebook. A major deficiency is particularly their lack of structure, but also the other attributes of information quality can be improved by more advanced online tourism communities. A second section thus proposes that a) Wiki communities improve timeliness, completeness and structure of online communities b) personal spaces improve the structure and the personalization of traditional online tourist communities and c) Mobile communities provide higher quality information than traditional online tourist communities.

Posted at the Zurich Open Repository and Archive, University of Zurich
ZORA URL: <https://doi.org/10.5167/uzh-61362>
Conference or Workshop Item
Accepted Version

Originally published at:

Schwabe, Gerhard; Prestipino, Marco (2005). How Tourism Communities can change travel information quality. In: 13th European Conference on Information Systems (ECIS) 2005, Regensburg, 26 May 2005 - 28 May 2005.

HOW TOURISM COMMUNITIES CAN CHANGE TRAVEL INFORMATION QUALITY

Gerhard Schwabe, Department of Informatics, University of Zurich, Winterthurerstrasse 190 CH - 8057 Zürich, schwabe@ifi.unizh.ch

Marco Prestipino, Department of Informatics, University of Zurich, Winterthurerstrasse 190 CH - 8057 Zürich, presti@ifi.unizh.ch

ABSTRACT

Largely ignored by research, online travel communities have already changed the travel behavior of the younger generation. They retrieve and exchange information prior to travelling and share their experiences afterwards. This paper presents some empirical evidence that the quality of the information retrieved justifies their behavior. The evidence is embedded in a larger framework and a set of hypotheses that establish a relationship between the choice of a travel information system and attributes of information quality. The paper argues that relevant attributes of information quality are timeliness, completeness, structure and personalization. Three studies support our proposition that a traditional discussion-based online tourism community provides more timely, more complete and more personalized information than a commercial guidebook. A major deficiency is particularly their lack of structure, but also the other attributes of information quality can be improved by more advanced online tourism communities. A second section thus proposes that a) Wiki communities improve timeliness, completeness and structure of online communities b) personal spaces improve the structure and the personalization of traditional online tourist communities and c) Mobile communities provide higher quality information than traditional online tourist communities.

Key words: Tourism information systems, online community, collaboration, Wiki, mobile tourism

1 Introduction

A lot of research has strived to improve tourism by providing automatic guidance and transactions with mobile devices (e.g. Crumppet [Poslad et al. 01], Telemaris [Laakso et al 03] and Estia [Ortiz et al. 01]). Most of this research has been limited to the prototype stage not only due to technological problems but rather because it turned out to be very expensive to provide high-quality information. While mobile tourist guides may benefit from the recent digitalization of map information in order to guide the traveler to the legendary “next good pizzeria”, more complex information such as a trustworthy general advice what to do next in certain situations is very difficult and expensive to provide.

This paper offers a different approach to look at future travel information. Instead of looking at professionally prepared content it analyzes the information provided by tourism communities. This information is provided for free to the community members. If this information is of sufficient quality, it is a primary candidate for future tourism information and may change the way travelers inform themselves while being abroad. A recent publication on tourism and virtual communities [Corigliano & Baggio 03] also argues that virtual communities are able to produce high-quality content for travelers.

Traditional research on virtual communities focuses more on the social relationships [Rheingold 93] or business opportunities [Wenger et al 02][Hagel et al 97], whereas our research looks at them as information systems, providing information products or information services (for a more detailed discussion [Prestipino et al 05]. This perspective allows analyzing the information quality. While our previous work [Prestipino 04][Prestipino et al 05] has established this perspective and has described some initial explorative empirical work and prototype development, this paper introduces a coherent framework and a set of hypotheses that both structure prior work on community based tourist information and serves as a guide for future evaluation of the information quality of different kinds of travel information systems.

2 Research goals, methodology and data collection

Our research strives to establish the informational value of electronic tourism communities. We want to both understand how electronic communities as they exist today currently add value to tourism and what value emerging new forms of tourism communities will add. This research is in the theory generation phase, i.e. we strive to formulate hypotheses that are grounded in literature and exploratory empirical work. As typical for this research phase, we have to prefer a deeper understanding to rigorous research methodologies. We therefore select from a wide variety of sources and include empirical work that is only able to justify hypotheses, not to support them in a rigorous sense. The thrust of our empirical work went into comparing traditional tourist guidebooks to online communities. Here we conducted three successive explorative studies on the information value of tourism communities [Suter 04][Waldburger 04]. Details on the data collection and results can be found in [Prestipino et al 05]. This paper strives to make the most important results available in the English-speaking world, to deeper analyze their implications and to synthesize them in a coherent framework.

We conducted a total of three studies observing information quality. The first study establishes the informational value of tourism communities from the perspective of the community members. It analyzed how well the community answers information requests from their members. A total of 206 discussions were analyzed over six months to find out how many travel questions were answered in a reasonable time [Prestipino 04]. A total of 105 travel related questions were analyzed. The community observed is a German non-commercial community about Brazil founded in 1998. Access is completely web based. Discussions are mainly in German and to a lesser extent Portuguese. Data was collected from the community archives.

The second study covered the same perspective, but we took a closer look on how fast the travel related questions were answered. This study collected data over three months in spring 2004 and analyzed the response to 24 travel related questions [Waldburger 04, Prestipino et al 05]. In these studies we demonstrated that communities satisfy their members' needs to a high degree (details on the results will be presented later in this text). The second study furthermore compared the quality of the retrieved information with the quality of the information in the commercial guidebook Rough Guide [Clearly et al. 03]. This guide was chosen because the most recent edition of the more popular Lonely planet was from 2001/2002 and thus outdated. The third study compared the information quality of Rough guide with the community on the basis of 18 neutral questions. Results of those three studies will be presented later in the text. Further data and insights were gathered:

- a) in a travel diary of one of the authors during a trip to Brazil in fall 2004.
- b) through the implementation and test of a prototype [Waldburger 04]. This prototype adds location based information to travel community forums and supports mobile access to community data.
- c) through the implementation and test of a prototype [Suter 04]. This prototype adds a shared knowledge base to the community space that can be linked to discussions.

3 A FRAMEWORK FOR INFORMATION QUALITY

Our main objective is to establish that improved tourism information systems lead to an improved information quality. In the long term we furthermore want to establish, to what extent this improved information quality leads to improved travel quality (ref. figure 1).

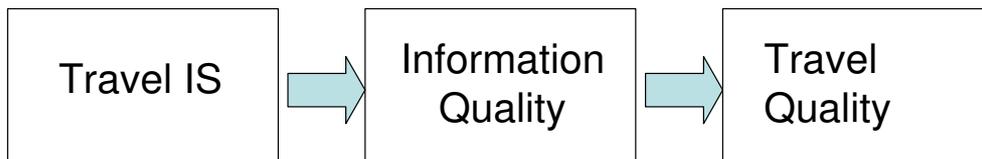


Figure 1: Travel IS influence information quality. Information quality influences travel quality

Travel IS cover both the technology (e.g. a forum) and the induced usage behavior (as observed in the member contributions to the forum). This makes sense, because technology only leads to changes through its use [Schwabe 00, Venkatesh et al 03]. Figure 2 introduces an elaborate version of the framework, further defining the constructs.

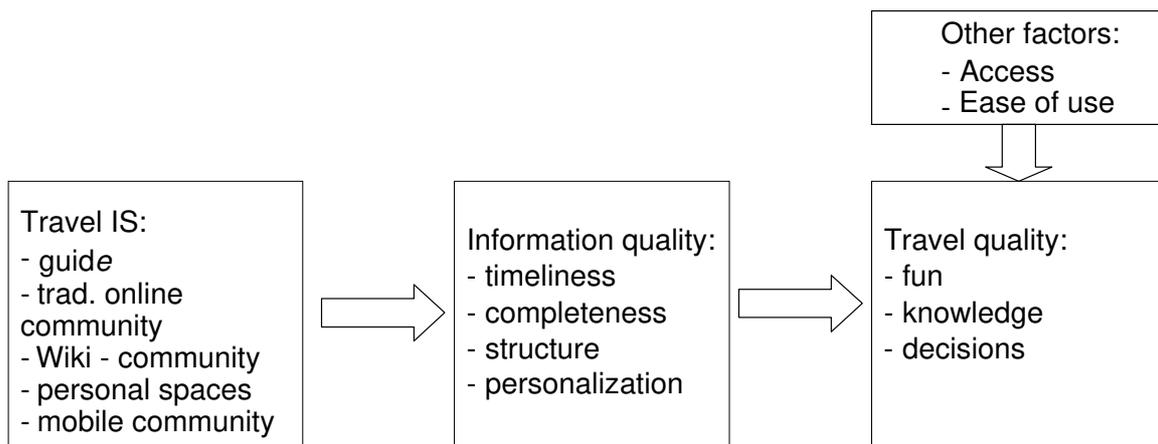


Figure 2: Framework for studying the informational value of different forms of tourism information

Travel IS: The framework covers five possible forms of travel information systems: A printed travel guide (e.g. Rough guide), a traditional discussion oriented online community, a Wiki community, a community with personal spaces and a mobile community. The latter three are emerging modern community based information systems.

a) Currently the guide book is still the prominent media for tourists. As an information system it is quite simple as there is a separate group of information producers and information consumers. Interaction between both is possible but typically with a large time lag (between different editions of the book).

b) Traditional online travel communities have been well-established for years. Typically they create, structure and archive their information in discussion trees. This feature makes it easy to participate in ongoing discussions.

c) The Wiki community allows the community to keep knowledge in a structured form as shared material in a Wiki. A Wiki is a kind of web server that provides a mechanism for creating and editing web pages through a web client, i.e. users may simply click an “edit” button and edit the content of pages. Thus, any visitor to a web page may also become an author. The largest Wiki-based travel community is Wikitravel [<http://www.wikitravel.org>] that strives to establish a world-wide travel guide following the example of the joint development of an encyclopedia in the Wikipedia project [www.wikipedia.org]. The information quality of the Wikipedia has been rated superior to commercial encyclopedias (Brockhaus, Microsoft Encarta) by a professional journal [Kurzidim 04]. Wiki based information spaces can and will be connected to traditional communities in order to allow for efficient transfer of information (fluidity). Transfer occurs both ways: knowledge as outcome of the discussions in the forum goes into structured, coherent texts in the shared space and content in the shared space is still connected to the discussion space to preserve legitimacy and transparency (how and by whom was this knowledge created). This model allows the content to be easily discussed and thus maintained up-to date. Finally, discussions containing information that is too specific and individualized to fit into the structured knowledge may still be attached to the shared content and thus still be easily retrievable. Attaching discussions to shared content also gives users a starting point, as they can quickly overview existing discussions they may join in if the structured knowledge base is not sufficient.

d) In an online community with personal spaces, each user can create his or her personal view on the community’s content (e.g. during travel preparation) and augment the community content with his personal content (e.g. to create a travel diary). The personal spaces can be private or publicly accessible. Technically such private spaces merge communities and Blogs (public online diaries). An example is the Virtual Tourist [www.virtualtourist.com]. This community has been online since 1998. It is not a companion product to a guidebook, but is profit-oriented: advertisement banners and product catalogues are prominently placed and based on user behavior. Virtual Tourist offers its members the

creation of personal home pages about their travels. These pages differ from traditional Blogs in two ways: content is not presented in chronological order and the content is semi-structured. When entering text, users chose categories to describe the specific information, e.g. they select category hotel and are then presented a form with fields for address, opinion, price category etc. Thus, the content of these Blogs is retrievable by categories. Additionally, users may freely design personal pages about themselves and introductory pages about their trips. User names are the same in forums and the Blogs, so a user's forum questions and replies and comments on other's Blogs can be retrieved. Other information available is page views, registration date, rank based on ratings and user-provided data.

e) In a mobile community the members can access and enter information with mobile devices (e.g. a Smartphone). The small size of the device requires the use of different information visualization, interaction and navigation methods. Furthermore, location/position information can be used to index travel related information and therefore provide context-dependent information. We also see new possibilities for travel coordination e.g.: users may meet other travelers or friends in defined locations ("flash traveler mobs"). In our research group, Waldburger [04] developed a prototype system for a mobile community. It allows retrieving community information with a smartphone, to annotate objects with their location and to retrieve location-specific information.

The traveler can use all five systems in combination and will likely receive the best benefit by using each information system where its strengths are and avoids usage where they are weak. In order to identify those strengths and weaknesses, this paper will analyze books and online travel communities and then isolate the specific value each modern community support system adds to traditional online communities.

Information quality: Each of the travel IS can improve information quality in a specific way. Based on Rittberger's [00] and Bailey & Pearson's [83] work, the framework identifies four quality factors: Timeliness, completeness, structure and personalization. *Timeliness* refers to the fact, whether information is up-to-date. Clearly, timeliness is more an issue with fast-changing information (e.g. about events in a travel destination) than with stable information (e.g. on a country's history). Thus, more timely information offers the opportunity for more participation in the social and cultural life of a travel destination. *Completeness* refers to the ability of a medium to serve information needs. There are two aspects of completeness: How completely does an information system answer the traveler's information request (i.e. does she find an answer for all question) and how complete is the retrieved information. Timeliness and completeness are of particular importance for critical information, e.g. on travel safety. *Structure* refers to presentation and structure of information, which may greatly affect efficiency of information access. Information structure is particularly important for gaining a deeper understanding of the travel destination. *Personalization* refers to the possibility to access information that is specifically relevant for someone's own context. Like timeliness, personalization can greatly enhance the traveler's participation in social and cultural life. Information quality factors will be discussed in more detail in the sections below describing our hypothesis. Whereas information quality of guidebooks is assured by its editors, in virtual communities it is assured through discussions and thus depends on the community's liveliness.

Travel quality: We propose that improved information quality can lead to improved travel quality. Travel quality can be measured as the fun a person has had during the travel and the knowledge (e.g. about a country) a person has gained. Besides information quality other technology related factors contribute to travel quality: *Access* refers to the technical possibility of accessing information. While a guidebook may be carried around, access to electronic data is dependent on a mobile device or access to computer systems. *Ease of use* [Venkatesh et al 03] refers to the efforts a user has to undertake in order to use the information product/service. The generation of hypotheses on the relationship between information quality/other technology related factors and travel quality is beyond the scope of this paper.

4 COMPARING GUIDEBOOKS WITH COMMUNITIES

We propose the following hypotheses H1 on the improved information quality that online tourism

communities offer:

Hypothesis H1: *Traditional online tourism communities provide higher quality information than guidebooks except for information structuring.*

The following sections will argue why this is plausible using sub-hypotheses for each of the information criteria. These arguments will be based on our exploratory empirical studies and on anecdotal evidence from the travel diary (see below).

4.1 Timeliness

A few anecdotal episodes collected by one of the authors during his recent (October 2004) visit to Brazil may illustrate the problem of outdated information products (the guidebook used was again the Rough Guide to Brazil [Cleary 03]):

- When looking for the recommended Hostel Dois Continentes in Sao Luís, it turns out to have ceased existence two years before and the premises had been turned into an expensive hotel
- Arriving in Fortaleza Airport, he looked in vain for the direct and comfortable bus to the beach areas described in the guidebook. According to the official tourism information at the airport, this connection has not been served for almost three years, and the official complained about the everyday crowd of tourists enquiring for this bus, because it is still mentioned in many guidebooks.
- When visiting the Lencois Maranhenses, he discovered a new road had been opened and transfer time from Sao Luís dropped from 8 hours to 4. Instead of taking a night bus, the trip could be done in the early afternoon.

It is thus easy to demonstrate that information in tourist guides can be outdated. There are also good arguments, why online tourism communities can provide more up-to-date information: Information is added more frequently than in guide books. Community members can correct other member's contributions if they provide outdated information. Thus, a member can expect a direct answer to his questions to be more up to date than the information in a guide book. The issue becomes more difficult when he accesses the information stored in the community archives. The older the retrieved information is the more likely it is outdated. As a community archive typically stores time-stamped contributions, he can then judge whether the information is likely still up-to-date. As the online community is an system open to the internet (in contrast to guide books) the traveler can use the evidence given in an older community contribution to verify whether it is still up to date.

Although we have not been engaged in any systematic investigation on the timeliness of information, we see reason to propose hypothesis 1.1.

H 1.1: Traditional online tourist communities provide more timely information than a guidebook.

4.2 Completeness

While it may be plausible that online tourism communities provide more timely information, it is not obvious that they are also more complete. Companies such as the Lonely Planet have built up a reputation for providing precisely the information a traveler needs. They systematically collect this information assuring that no important facts are missing. The information collection in online communities is opportunistic with no checks for completeness. An analysis of the community's capabilities has to distinguish between access to the community members' knowledge stored in their heads and access to the knowledge stored in the community's archives. It may appear plausible that the sum of the community members can provide more complete information (if asked explicitly to do so on a specific issue). The first two studies indeed showed that communities answered requests for information very completely: 80 percent of all travel related questions in study one were answered within a reasonable time. An average of three persons (excluding the questioner) contributed to each question. In study two also 80 percent of all travel related questions were answered within 24 hours, less than 10 percent were not answered at all. The median value of contributors is two, the average

value is 6.7 (there were some very long and heated discussions on a few topics). Study two also analyzed how complete the provided information was. Four judges (A,B,C,D) rated the retrieved results and compared them with the information they found in the 2003 edition of the Rough guide [Cleary 03]:

Travel related question answered ($\Sigma = 24$)	online community				Guide			
	A	B	C	D	A	B	C	D
Yes	16	16	10	14	13	13	8	13
Partially	6	6	11	7	2	2	5	2
No	2	2	3	3	9	9	11	9

Table 1: Information completeness in online a community and a guide book

The most striking difference are the unanswered questions: While only 2-3 questions were not answered at all in the community, the guide did not answer about 9 questions. So the community members were well-advised to use the community instead of the guidebook.

Study two may be in so far biased, as the questions were originally posed to the community. The community members may have intentionally made a choice to turn for some questions to the community and to use the guide book for other questions. Study three therefore analyzes how a set of neutral information needs (formulated as questions) were satisfied by online communities and a travel guide. Therefore we formulated a set of 18 questions covering a wide area of topics and ranging from very specific to very general. We strove to formulate them neutrally, but could only assure a fair process (particularly: The questions were formulated without prior knowledge, whether they could be answered by online communities or guide. It is very difficult to arrive at a neutral selection of questions, if they at the same time should be balanced across several dimensions). In order to avoid disturbing the community, we tried to retrieve the community's answers from their online archives. As inter-rater agreement was high in the second study, we relied only on one rater (a student) in this study. We were surprised about the clear result: The Brazil Web was able to answer 11 of the 18 questions completely (61 %); three questions were answered incompletely and four questions (22%) were not answered at all. The Rough Guide only gave complete answers to seven of the 18 questions (39%), for eight questions (44 %) there were partial or incomplete answers and three questions remained unanswered. The sheer volume of information stored in community archives appears to be more important for information completeness than the careful selection of facts in a guidebook. Thus with regard to completeness information quantity leads to information quality.

The insights gained in these three formative evaluations make us confident to propose hypotheses H1.2.

H 1.2: Traditional online tourist communities provide more complete information than a guidebook.

4.3 Structure

While electronic retrieval may better support search for a certain piece of information, a well-designed structure is much more suitable for a systematic knowledge acquisition. A well-designed book has little redundancy; the content is described in a way that later pieces of knowledge build on prior pieces; and the content is structured in a way that is didactically and aesthetically appealing. Typical guide books have to find a compromise to support search for specific information and to give an overview over the general information. They address both information needs in different book sections. Online travel communities are poorly prepared to give an overview as all content is structured in discussion trees. Thus we propose in hypotheses H1.3 that guide books provide better structured information than online communities. From the perspective of the traditional online community that means:

H 1.3: Traditional online tourist communities provide poorer structured information than a

guidebook.

As we will see later, online tourist communities' structure can significantly be enhanced by Wikis.

4.4 Personalization

Information retrieval is much easier if information is provided according to personal preferences and the personal context, i.e. if it is provided in a personalized manner. Improved personalization is a major advantage with complex information need. Travelers face complex information needs, ranging from destination choices and itinerary planning to information needs arising spontaneously during travel and being determined by unpredictable circumstances. This is particularly true for self-organized tours, where itinerary and activities are completely free to be chosen. The objects of the information need may be thousands of miles away, involving an unknown language, society and culture. The traveler can not rely on his experience, senses or friends at home. Information is dynamic and travel routes and decisions are dependent on highly volatile factors. Consider the following description of a tourist's information need: „I have three weeks to travel with 2000 Euros, and I would like to see a part of central Africa, but also visit a certain city a friend of mine is living in. What places should I visit?“. The answers given by the community may not only help the tourist satisfy the information needs she is aware of, but also hint to information that she has not been actively searching (a discussion on kinds of information needs can be found in [Prestipino et al 05]), e.g. pointed to a cheap flight opportunity.

The more individualization is permitted, the more variables have to be taken into account and the more information must be available. An ideal information system not only needs to hold a vast amount of data, it would also have to provide a correspondingly powerful way of specifying queries. No query mechanism achieves the expressiveness and fine distinctions of human language. Information needs of travelers are characterized by highly dynamic and individual factors, as perceived attractive sites, weather conditions, prices, transportation, accommodation, holidays and bank holidays, political and economical changes, appointments and so on. In an online discussion the community members often spend a significant part of the dialog establishing a shared understanding of the question a member is really trying to ask. Travel guidebooks completely lack this potential for dialog. Case [02, p.289] concludes in his survey on human information seeking research: “Empirical research tells us that many people use formal sources rarely, relying instead on informal sources such as friends and family, or knowledgeable colleagues at work, along with what they learn from mass media and other elements of their environment. [...] Institutions and their formal information systems are often not able to keep up with the unique and unpredictable demands they face. Formal systems will never be able to satisfy most information needs”.

As we have observed in our three studies, a working online tourism community is willing to satisfy those complex information needs in a reasonable time. We therefore propose hypotheses H1.4:

H 1.4: Traditional online tourist communities provide better personalized information than a guidebook.

5 ADVANCED TOURISM COMMUNITY SUPPORT

In the prior section we have proposed that current online communities are superior to guidebooks with regard to information timeliness, information completeness and information personalization. We furthermore proposed that information structure is inferior to guidebooks. The next sections take the current online tourism communities as a reference and propose hypothesis how new forms of online tourism communities can improve their information quality. Those new forms contribute collaborative spaces, personal spaces and support for mobility. As most of those systems have only recently been developed, those hypotheses are more speculative than the hypotheses proposed so far. We will therefore be shorter in arguing for their support. Before moving on to the hypotheses, we will briefly summarize weaknesses of traditional discussion based online tourism communities:

1. Lack of content structure: The discussion based tree structure of information widely disperses information about the same object or similar objects through the system.
2. Insufficient possibility to explicitly build on prior knowledge. This weakness is a direct consequence of the lacking content structure. Members are discouraged to provide unsolicited information leading to sub-optimal information completeness.
3. No possibility to update stored information. Incomplete, incorrect or out-of-date information cannot be directly corrected or updated. As automatic retrieval can pull information out of its discussion context, even corrections in an on-going discussion may be ignored by a searching community member. This leads to a sub-optimal information timeliness
4. Lack of personal spaces: At the heart of personalization lies a personal space for each community member. Thus, traditional online communities provide suboptimal information personalization
5. Only stationary information access: Traditional online communities still run mainly on PCs. PC access is well-suited for travel preparation and post-travel sharing of experiences, but ill-suited during travelling. Opportunities for information access and information input during travelling are missed leading to a sub-optimal information timeliness and information completeness.
6. Lack of location specific data. Location based information is particularly important for travelling, but not made explicit in online travel communities. This lack leads to a suboptimal information structure. Location information on the traveler opens the opportunity to provide much better contextualized information. The lack of this location information thus leads to suboptimal information personalization.

Note that except for the lack of content structure and the stationary information access all of those weaknesses are weaknesses of traditional guidebooks, too.

5.1 Collaborative spaces

In an in-depth analysis of discussion as part of our first study [Prestipino 04] we found out that only 52% of initial postings refer to questions, whereas the remainder consists of postings that were not solicited in the first place but were nevertheless of value for the community. The majority of those postings were merely informative and not meant to start a discussion. Discussion based online communities are ill-prepared to support this kind of information. Shared collaborative spaces allow contributing to a specific piece of information within a content structure that the community establishes. The most well-known examples are Wikis. We propose they will solve the first three problems of traditional online communities mentioned above leading to improved timeliness, completeness and structure.

Hypothesis H2: *Wiki communities improve timeliness, completeness and structure of online communities.*

H2.1 Wiki communities provide more timely information than a traditional online tourist community

Information update is very easy in Wikis as any user may change any page at any time. In Wikitravel this update-mechanism is used to rigorously assure the quality of all input in a collaborative manner. In an elaborate process any new information is publicly posted in a special list so that the other community members can check its value. Typically, a page is updated several times before its initial stabilization. Improved information structure (see below) supports members in identifying and correcting information bits that they have found to be outdated.

H2.2 Wiki communities provide more complete information than a traditional online tourist community

A shared structure clearly identifies holes in the shared information space and motivates community members to contribute. It is furthermore much easier to submit unsolicited contributions.

Caveat: This hypothesis only holds true if the Wiki is connected to one or more discussion based communities. Pure Wikis lose the motivational aspects of participating in a discussion and the

gratification by getting compliments from others. This loss may balance the gain discussed above.

H2.3 Wiki communities provide better structured information than a traditional online tourist community

As traditional online tourism communities have no structure beyond discussion trees, Wikis can easily improve that situation through a shared content structure.

5.2 Personal spaces

Hypothesis H3: *Personal Spaces improve the structure and the personalization of traditional online tourist communities*

H3.1 Communities with personal spaces provide better structured information than a traditional online tourist community

Personal spaces will not only improve the structure of information for the individual space-owner but also for the community. Other community members can benefit from these personal spaces if they have similar interest to the owner or have a particular trust in him. This reflects that tourism advice is an experience good that highly relies on trust on individuals.

H3.2 Communities with personal spaces provide better personalized information than a traditional online tourist community

For those members with a similar need the information will not only be better structured, but also provides a selection of information that fits their own purposes better than information in a traditional online community. The creators of personal spaces can use them to prepare travels, store intermediate results and create their own views on community information.

5.3 Support for Mobility

Hypothesis H4: *Mobile communities provide higher quality information than traditional online tourist communities*

H 4.1: Mobile communities provide more timely information than traditional online tourist communities.

Mobile devices allow for situation based contributions while travelling. Traditional online-communities already reduce the update cycle of tourist guides from several years (between editions) to several weeks (the time a traveler needs to return home and to report his experiences). Mobile community access reduces the update cycle to several days or even less, as a community member can immediately report new information or update outdated information as she is in the situation. Mobile access also allows her to access the most up-to-date information while travelling. Small contributions are easily made and the cognitive load of memorizing outdated or incomplete information is reduced. This leads to an incentive to quickly add or correct information.

H 4.2: Mobile communities provide more complete information than traditional online tourist communities

Information completeness is improved by the additional people on site. Most important a new type of information is added: short living information. While it may not make sense to enter information on current events into a traditional online travel community, this information can very well be useful, if one mobile traveler provides information to other mobile travelers. The success of real-life soaps (like the Big-Brother show) leads us to the conclusion that we will also see a new type of community user: the spectator, who consumes short-living information for entertainment.

Caveat: This hypothesis only holds true if mobility is an augmentation and not a replacement of current communities. As input of information is more difficult with mobile devices than with a stationary PC, the number and size of contributions is likely to decrease if the community is restricted to mobile input.

H 4.3: Mobile communities provide better structured information than traditional online tourist communities

Mobile devices can automatically collect contextual information (e.g. location, time, proximity to other users) that later supports a structured access to information. This information cannot only be used for searching, but may also automatically generate guided tours on “beaten tracks”. However, we accept that it is a particular challenge to make good use of this structure information on the small interface of a mobile device.

H.4.4. Mobile communities provide more personalized information than traditional online tourist communities

The automatic and manual capturing of contextual data allows to present community members information that is relevant to their current or desired situation.

6 SUMMARY AND FURTHER RESEARCH

Our research comes up with a framework and set of hypothesis on the relationship between travel IS and information quality. Table 2 summarizes the hypotheses.

		Timeliness	Completeness	Structure	Personalization
A	Guidebook				
B	Online community	B>A (H1.1)	B>A (H1.2)	B<A (H1.3)	B>A (H1.4)
C	Wiki-Community	C>B (H2.1)	C>B (H2.2)	C>B (H2.3)	
D	Personal Spaces			D>B (H3.1)	D>B (H3.2)
E	Mobile Community	E>B (H4.1)	E>B (H4.2)	E>B (H4.3)	E>B (H4.4)

Table 2 Overview of hypotheses (“>” means “better quality than”)

Comparing traditional information products with online communities allows us to understand the value and the potential of online communities. If our hypotheses are confirmed, this may have large impact on the way we travel and gain information during traveling and may also change the market for travel information. Commercial travel guide publishers may have to change their business models and tourism has to adapt to a differently informed customer group. While we do not assume that all the tourism markets will rapidly change, some travel segments (e.g. the backpackers segment) may very soon adapt to the new media. It is only consequent that the Lonely Planet as the market leader on travel guides is already hosting one of the largest international online travel community. The rise of travel related Wikis, particularly Wikitravel, may still soon move the business model of travel related information towards an open content model. As Wikis significantly improve content structure, we also regard them as an important intermediate step towards mobile tourism communities. This market may then be interesting for telecom service providers, although the free content approach may make it difficult to develop a business model for them. The rise of personal spaces in online travel communities may offer interesting opportunities for digital photography service providers (e.g. printing agencies). The most important effect may be that advanced online tourism communities will strengthen the position of the tourism consumers as the market becomes more transparent and they gain the opportunity to organize themselves.

This paper can give empirical evidence only for the comparison between guidebooks and traditional online travel communities. Our next steps will be to gather empirical evidence for the more advanced online travel communities as they establish themselves on the market place. We have furthermore started *summative* evaluations of the informational quality of traditional online travel communities (in comparison to guidebooks). As this research is conceptually challenging and time consuming, we invite other researcher to join us using our framework and hypothesis as a starting point.

7 REFERENCES

- Bailey, James E. and Sammy W. Pearson (1983), "Development of a Tool for Measuring and Analyzing Computer User Satisfaction," *Management Science*, Vol. 29, No. 5, pp. 530-545.
- Cleary, D.; Jenkins, D.; Marshall, O.(2003): *The Rough Guide to Brazil*. Rough Guides Publishing. 5th Edition.
- Case, Donald O. (2002). *Looking for Information. A Survey of Research on Information Seeking, Needs and Behaviour*. Academic Press, Elsevier Science, New York.
- Corigliano, Magda Antonoli & Baggio, Rodolfo (2003). Italian tourism virtual communities: empirical research and model building. In: Frew, Andrew J.; Hitz, Martin; O'Connor, Peter (eds.) *Proceedings of the International Conference in Helsinki, Finland*, p. 86-95. Springer, Heidelberg.
- Hagel, J. III; Armstrong A.G.(1997): *Net Gain: Expanding Markets Through Virtual Communities*. Harvard Business School Press: Harvard.
- Hevner, Alan R.; March, Salvatore T.; Park, Jinsoo; Ram, Sudha (2004). *Design Science in Information Systems Research*. *MIS Quarterly*, Vol. 28, Issue 1, p. 75-105.
- Kurzidim, M.(2004): Wissensstreit – die kostenlose Wikipedia tritt gegen den Marktführer Encarta und Brockhaus an. In c't Heft 21, p. 132 – 139.
- Laakso, Katri;Gjesdal, Ove and Jan Rasmus Sulebak (2003): Tourist information and navigation support by using 3D maps displayed on mobile devices *Mobile HCI '03*, September 8-11, 2003, Udine, Italy.
- Ortiz, Guillermo Fernandez ; Caires Branco, Ana Sofia ; Sancho, Paz Ruiz ; Castillo, José Luis (2001): ESTIA-Efficient Electronic Services for Tourists in Action. *TES 2001*: 163-174
- Pfaffenberger, B. (2003). A Standing Wave in the Web of our Communications: Usenet and the Socio-Technical Construction of Cyberspace Values. In: Lueg, C. and D. Fisher (eds.) *From Use-net to CoWebs*. Springer, London, S. 20ff.
- Prestipino, M.(2004): Supporting Collaborative Information Spaces for Tourists. In: *Mensch und Computer 2004*, Paderborn.
- Prestipino, Marco (2004). Supporting Collaborative Information Spaces for Tourists. *Conference Proceedings, Mensch und Computer 2004*, 5.–8. September 2004, Paderborn.
- Prestipino, Marco, Schwabe, Gerhard (2005). *Tourismus-Communities als Informationssysteme*. Accepted for 7th. Internationale Conference Wirtschaftsinformatik 2005.
- Poslad, S., Laamanen, H., Malaka, R., Nick, A., Buckle, P., Zipf, A (2001).: CRUMPET: Creation of User-friendly Mobile Services Personalised for Tourism. *Proceedings of the second international conference on 3G mobile communication technologies, IEE 3G 2001*. 26 -28. March 2001, London
- Rheingold, H. (2003): *The Virtual Community: Homesteading on the Electronic Frontier*. Addison-Wesley: Reading, MA.
- Rittberger, Marc (2000). Quality evaluation of electronic communication fora with evalYOUate. In: *Proceedings of the 2000 Conference on Information Quality*. Klein, B. D. and Rossin, D. F.(eds.); M.I.T., p. 137-147.
- Schwabe, G. (2000): *Telekooperation für den Gemeinderat*. Kohlhammer, Stuttgart.
- Suter, S. (2004): *Virtuelle Gemeinschaften als Informationssysteme im Bereich Tourismus. Evaluation und Optimierung der Unterstützungstechnologie zur asynchronen kooperativen Wissensgenerierung in virtuellen Gemeinschaften*. Diplomarbeit, University of Zürich.
- Venkatesh, V., Morris, M. G., et al. (2003): User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly* 27: 425-478.
- Waldburger, M. (2004): *Unterstützungswerkzeuge für mobile virtuelle Gemeinschaften im Bereich Tourismus* Diplomarbeit, University of Zürich.
- Wenger, E. (2002); McDermott, R.; Synder, W.: *Cultivating Communities of Practice*. Harvard Business School Press: Boston.