

ONLINE CONTENT MINING TECHNOLOGIES FOR THE CRUISE INDUSTRY: State-of-the-Art and Acceptance

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ABSTRACT: Online reviews of hotels are widespread on the Internet. In addition to writing reviews about hotels, travellers also review cruises. Cruise operators could analyze online cruise reviews with the help of state-of-the-art online content mining (OCM) technologies and use the results to enhance their marketing intelligence and quality management. The potential of such technologies is ultimately dependent on their acceptance by cruise managers. Hence, a model of predicted acceptance of OCM technologies is proposed. The model is based on existing technology acceptance models and was developed based on 19 in-depth interviews with decision-makers from the cruise industry. **Keywords:** Technology Acceptance, Web Mining, Opinion Mining, Online Content Mining, Cruise Industry.

RESUMEN: Las revistas online de hostelería proliferan en Internet. Además de comentarios sobre hoteles, los viajeros también comentan sobre Cruceros. Los operadores de cruceros pueden analizar los comentarios online de sus clientes, con recurso a técnicas de recuperación de contenidos online (RCO), y usar esos resultados para la mejora de sus sistemas de información de marketing y la gestión de la calidad. El potencial de esta tecnología depende decisivamente de su aceptación por parte de los gestores de cruceros. En ese sentido, el presente estudio presenta un modelo de predicción de la aceptación de las técnicas RCO. El modelo propuesto se basa en otros modelos de aceptación de tecnologías, y fue desarrollado con base en 19 entrevistas de profundidad a decisores de la industria de cruceros. **Palabras clave:** Aceptación de tecnologías, Web Mining, Opinion Mining, Recuperación de contenidos Online, Industria de Cruceros.

RESUMO: As revistas online de hotelaria proliferam na Internet. Além de comentários sobre hotéis, os viajantes também comentam sobre Cruzeiros. Os operadores de cruzeiros podem analisar os comentários online dos seus clientes, com recurso a técnicas de recuperação de conteúdo online (RCO), e usar esses resultados para melhorar os seus sistemas de informação de marketing e a gestão da qualidade. O potencial desta tecnologia depende decisivamente da sua aceitação por parte dos gestores de cruzeiros. Nesse sentido, o presente estudo apresenta um modelo de predição da aceitação das técnicas RCO. O modelo proposto baseia-se em

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outros modelos de aceitação de tecnologias, e foi desenvolvido com base em 19 entrevistas de profundidade a decisores da indústria de cruzeiros. **Palavras chave:** Aceitação de tecnologias, Web Mining, Opinion Mining, Recuperação de conteúdos Online, Indústria de Cruzeiros

INTRODUCTION

Searching for customer generated travel reviews has become essential for planning holidays or for deciding on travel destinations. Web 2.0 portals contain vast numbers of reviews and more are added every day. For example, the German Web 2.0 portal Holidaycheck (www.holidaycheck.de) contains more than 3 million customer-written hotel reviews (as of: 7/20/2010). This enormous amount of information is highly interesting for potential holiday-makers, as well as for travel companies. Online reviews contain information about customers' opinions, wishes, expectations or demands and tend to be more extensive than traditional complaint cards in hotel rooms or complaint forms on tour operator Web pages. Tour companies can use this positive or negative feedback to plan new products or evaluate existing ones. In contrast to other papers dealing with opinions in customer-generated hotel reports such as those from Pekar & Ou (2008) or customer generated product reports such as those from Hu & Liu (2004), this paper focuses on traveller-generated cruise reviews from Web 2.0 sources. Holidaycheck, for example, contains reviews of about 1070 ships from all categories (sea, river, ferry) and sizes (from mega cruise ships to small sailing ships) (as of: 7/20/2010). This outstanding number of travel reports and customer-generated evaluations on the Internet pose an operational challenge for customer care and market research departments. Often state-of-the-art information technology needs to be used to enable the efficient processing of such huge datasets. These technologies employ natural language processing, advanced algorithms for Web searching, machine learning with artificial intelligence and novel techniques for presenting information. In this paper, we use the umbrella term online content mining (OCM) for all methods and technologies related to searching, mining, sorting, and analyzing user-generated content from the Internet.

This paper is organized as follows: Section 2 provides an overview of related work in the area of electronic word of mouth (eWOM) usage for marketing intelligence and quality management under the specific viewpoint of the cruise industry. The state-of-the-art of OCM technologies is also presented. In Section 3, a model for predicting the acceptance of OCM technologies within the context of the cruise industry is presented. In Section 4 implications for practice and recommendations for the use of OCM technologies in cruise are discussed. Further, the research contribution, limitations of research and some ongoing work is elucidated.

RESEARCH BACKGROUND AND RELATED WORK

Web 2.0 and eWOM in the cruise industry

Modern Web 2.0 travel communities such as tripadvisor.com or holidaycheck.de enable millions of Internet users to write and share comprehensive reports about their holiday experiences. These online holiday reviews are often supplemented with private photos and personal data, such as age, gender or travel experience. They provide detailed information about travellers' individual feelings and experiences during their holidays. Research has shown that this source of information influences travellers or potential travellers more strongly than traditional advertisements or company-related information (Kardon, 2007; Wang & Wei, 2006). In academic literature, this phenomenon is called online interpersonal influence (Litvin et al., 2008). Research on this phenomenon already started in 1966 with the work of Dichter (1966), who examined the impact of word of mouth on customers. In 1972, Plog (1974) analyzed the influence of families and friends in the holiday planning process. On this basis, Westbrook (1987) defined word-of-mouth communication as "... all informal communications directed at other consumers about the ownership, usage, or characteristics of particular goods and services or their sellers".

The Internet enables the proliferation of customer communication and leads to an advanced form of word of mouth – the so-called electronic word of mouth. Hennig-Thurau et al. (2004) defined eWOM as follows: "... eWOM communication is (...) any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet." Consumer motives for writing and sharing online customer reviews varies considerably.

The proliferation of eWOM has been recognized as being influential in the hospitality and tourism industry. According to a survey by Gretzel & Yoo (2008) online travel reviews are extremely or very important in deciding where to stay. According to Fesenmaier & Cook (2009) 75 percent of US travellers have searched the Internet for information about holiday destinations or to check prices on the Internet. Furthermore, 85 million US travellers have booked some aspects of their journey though the Internet. In addition to having a strong impact on a travellers' decision process, online holiday reviews are also vital for tourism marketers and managers. Marketers can utilize this new source of information to their own advantage and develop strategies to gain a competitive advantage. For instance, organizations can use online holiday reviews to improve their understanding of the market's reaction to their advertisements or to new products, collect specific information about complaints and subsequently feed them into their quality control processes (Cooke & Buckley, 2008).

State of the art and use of opinion mining technologies

The emergence of Web 2.0 applications accompanied by user-generated content has led to a dramatic rise in unstructured data on the Internet. To optimize the search for information among this gigantic set of data, tourism companies can utilize advanced Web mining technologies instead of simply browsing through the Internet. Web mining technologies use text mining and are based on data mining techniques that were originally developed for the analysis of data structures in large computers. Text mining is used to find unknown knowledge within text corpora and text collections by analyzing semantic or statistical relationships (Stavrianou et al., 2007). Modern OCM technologies also enable effective mining and analysis of opinions in online holiday reviews. In this paper, modern OCM technologies are presented in four major steps:

Selection of the relevant data

The first step is the discovery of relevant data on the Internet or within selected sources, with the help of advantageous search algorithms. This task is called information retrieval (IR) (Stavrianou et al., 2007). Once the data has been discovered, a value assessment is conducted with the help of a relevance index. This index is composed of search machine page ranks from the source and the amount of registered users (Kaiser, 2009). Sources with a specific relevance level are extracted with the help of Web content mining tools and the information is stored in a local data base. If available, the users' personal data or his travel experience and booking details are stored as well.

Extraction of relevant data

The second step is the analysis of the content with the help of text and opinion mining technologies, which use different techniques from artificial intelligence to study and exploit the content within written text on the basis of alphabet, grammar and syntax (Kao & Poteet 2007). With the help of natural language processing technologies, noisy data such as spelling mistakes or replaced acronyms can be eliminated (Stavrianou et al., 2007). Words are reduced to their stems and classified with the help of lexical databases such as the one from Princeton University (wordnet.princeton.edu) or the General Inquirer from Harvard University (www.wjh.harvard.edu/~inquirer/). Finally, the reduced and classified words are put together to enable holistic analysis of a text based on natural language (Pekar & Ou, 2008).

With the help of natural language processing technologies and standard machine learning classification techniques such as support vector

machines (SVMs), a two-level analysis of traveller-generated cruise reviews is possible (Pang & Lee, 2004). The first level is the document level, which classifies an entire document into either a “positive” or a “negative” statement. For instance, an article about a cruise ship in a portal is mostly positive because positive words of sentiment (e.g. excellent, enjoy) dominate the document. The second level is the recognition of the sentiment with its polarity (positive, negative, neutral) and its magnitude (strong, intermediate, weak) in every sentence towards a product feature (cabin, restaurant, spa) and its product attribute (comfort, service quality, holiday feeling) (Kaiser, 2009).

Aggregation of relevant data

After the sentiments are successfully extracted, an aggregation of data concerning one special cruise ship has to be conducted. As an example, all online cruise reviews concerning the cabins of the cruise ship are combined to provide an overview of the information that was extracted from the selected Internet sources. The aggregated data can also be used to perform benchmarks between different cruise ships or between two different points in time. One practical example of this aggregation task is the Internet page www.trustyou.com, which analyzes online hotel reviews from various online hotel review platforms to provide detailed information about the positive and negative aspects of a specific hotel.

Presentation of relevant data

The last step in the process of mining online cruise reviews is a descriptive presentation of the relevant data. The first and easiest way of presenting is a plain list with all relevant text passages sorted by relevance in reference to the search task. The list can also contain hyperlinks that lead to the original source or can be exported to an Excel or PDF file. A more complex way is graphically presenting several features and different products at once.

TOWARDS A MODEL FOR PREDICTING TECHNOLOGY ACCEPTANCE FOR ONLINE CONTENT MINING TECHNOLOGIES

Research objective and rationale

Technical processes and usage possibilities of OCM technologies are only one aspect of successful implementation of technology in the cruise industry. A second aspect is the acceptance of information based on online holiday reviews and the technologies that extract it from the Internet. Because the above presented technology is currently

not in use, its acceptance potential among decision-makers has to be carefully considered. Those decision-makers are predominantly non-technical and tend to base their strategic and operational decisions on traditional marketing data and information from face-to-face customer communication. Furthermore, a high percentage of the existing cruise companies are medium-sized businesses, with an intermediate level of technology usage. Thus their knowledge of advanced technologies of Web and text mining is limited.

In order to systematically evaluate the adoption potential of OCM technologies in the cruise sector, dominant theories of innovation diffusion (abbr. IDT) and technology acceptance (abbr. TAM) were used as a foundation for conducting a series of expert interviews with decision-makers from the industry (Rogers, 2003; Davis et al., 1989; Venkatesh et al., 2003). The main objective of employing a qualitative approach in this context is the construction of a tentative, context-specific OCM technology acceptance model.

Method

In order to explore the relevant factors for technology acceptance of OCM technologies by decision-makers from the cruise industry, a qualitative research design has been chosen. The decision was supported by personal experience and research literature, which indicates that a qualitative research design would be optimal to discover important influences on the intended acceptance of online content mining technologies by the decision-makers from the cruise industry (Miles & Huberman, 2004). Our decision is based on the following arguments:

First, the decision-makers have different professional backgrounds and interests. Moreover, the research subject is novel and potentially complex for the respondents. Qualitative research addresses this issue by enabling a flexible personal interaction between the respondent and the interviewer. In support of data collection transparency and comparability of interview results, an interview guideline was developed and utilized (Miles & Huberman, 2004). Furthermore, a Web-based OCM software prototype called www.trustyou.com was used to illustrate relevant technical terms, discuss usage options and elaborate on possible risks. Where feasible, expert interviews were recorded and transcribed. In cases where the respondent had objections with regard to recording the interview, written notes were taken.

Second, qualitative research aims at exploration and information richness. The qualification and the insider knowledge of the participants, rather than their pure number, represent the critical factor for useful and relevant results in our chosen context. In our study, all participants are high-ranking decision-makers from the cruise industry, managers from established consulting companies, or industry experts (Silverman, 2007).

Table 1. Participants of the expert survey

No.	Company type	Position	Area of Operation	Country of Operation
1	Cruise company	Area manager	Internet, CRM	Europe
2	Tour operator	Area manager	Company development and market research	Germany
3	Cruise company	Press officer	Marketing and sales	Germany
4	Cruise company	Director	Cruise	Germany
5	Cruise company	General manager	Executive board	Global
6	Cruise tour operator	Speaker	Sales	Europe
7	Cruise tour operator	Speaker	Quality management	Europe
8	Cruise tour operator	Director	Web strategy and business development	Europe
9	Technology service provider	Chief developer	Content development	Europe
10	Cruise company	Director	Marketing	Europe / USA
11	Travel association	Speaker	Market research and information technology	Germany
12	University	Professor	Institute of maritime tourism	Europe
13	Business school	Professor	Operations research	USA
14	Technology service provider	Chairman	Executive board	Germany
15	Cruise tour operator	Manager	CRM	Germany
16	Cruise company	General manager	Executive board	Germany / USA
17	Online travel Agency	General manager	Executive board	Germany
18	Top management company	Vice president	Executive board	Global
19	Top management consulting company	Principal	Executive board	Global

Third, qualitative research allows an iterative data collection process. Especially the inclusion of new data and insights during the running process is possible (Creswell, 2008). Hence, the incorporation of new data from newly-acquired experts was possible. This possibility was of high practical importance for our research, enabling us to use our available respondents for the recruiting of other, 'unapproachable' experts.

Participants from the expert survey are listed (Table 1). The participants demanded anonymity because of the high information transfer during the expert interviews. Data collection took place between April and June 2010 and was conducted mainly by telephone. Saturation was reached after 17 expert interviews. From this point onwards, the interviews became repetitive, signalling the sufficiency of collected data. The use of the Internet prototype might be one reason for early saturation due to the clarity of terms and technical possibilities (Papathanassis & Knolle, 2011).

The qualitative research design we used is based on Gläser & Laudel (2009) and includes the following steps:

1. Development of a research strategy in respect to the theoretical research background, research case and available research methods: as mentioned above, the research strategy was based on a qualitative approach, in this case from the cruise industry.

2. Data acquisition: the data was collected with the help of an expert survey of decision-makers from the industry; the interviews were transcribed. All interviews were conducted in German.

3. Data analysis: the transcribed interviews were coded, merged and categorized using a qualitative content analysis method from Mayring (2000). The software Atlas.ti was used to create the necessary codes and categories.

4. Model generation: based on the identified categories and on prior knowledge from the field of technology acceptance research, a framework was developed to predict the acceptance of OCM technology. Further two important moderating variables have been identified. In this context, moderating variables are variables that are derived from the personal background of a person and that influence their behaviour and decisions (Venkatesh et al., 2003). These factors are created based on categories developed within qualitative content analysis. The categories are written in bold font; some contain subcategories, which are mainly used to structure the expressions from the experts. The subcategories are written in *italics*.

5. Quality control: the collected data, presented factors, and the resulting model were reviewed by the authors and repeatedly discussed with participating experts. The qualitative survey was supported by an electronic database and an electronic analysis tool; further state-

of-the-art research literature was used to assure a high research quality (Yin, 2009; Klein & Myers, 1999).

In the next section the identified factors of the predicted technology acceptance will be presented.

RESULTS

Trust in the new technology

The first factor is trust in the new technology. Many researchers argue that trust is essential to acceptance of technology and nearly all interactions between users and IT systems require an element of trust. For instance, Pavlou (2003) shows that e-commerce success depends highly on trust and perceived risk. Other studies in the area of B2C technology acceptance support this finding, as well (Ba & Pavlou, 2002; Gefen & Straub, 2000). The constructed trust factor consists of three major categories. The last category combines codes that lead to a rejection of the whole technology.

Category "Trust in OCM technologies"

Familiarity with complex technologies and deployed OCM technology: The collected data indicates that a prior knowledge from the field of information technology facilitates trust in OCM technologies. For instance, experts who are in charge of the CRM systems or Internet page of a company stated that they could easily handle modern OCM technology, due to their profound knowledge of complex technologies such as booking systems or Internet pages, and their daily use of the above (Expert 1). The opposite is also true, that is, experts with a lower level of familiarity have less trust in the technology.

Running or planned OCM projects: Running and scheduled OCM projects indicate basic trust in this technology. Companies with running projects are able to collect company-specific knowledge, which facilitates the information presented by potential technology provided by the field of OCM (Expert 1, Expert 8, Expert 18 and Expert 19).

Traceability of original information: The technological ability to follow the connection between aggregated results and the basic source from the Internet could be identified as a source of trust. Experts demand this connection to verify the technological abilities of the semantic technology (Expert 1).

Trust in technology providers: In nearly all companies, the implementation of OCM technologies would be accompanied by professional technology providers such as IT-consulting companies or other specialized companies. The experts recognize the relationship to these companies as being trustful; hence the technology they implement becomes trustworthy as well (Expert 1).

Category "Perceived trust in online cruise reviews"

Perceived quality of available content: The experts connect trust in technology with trust in online cruise reviews themselves. Hence trust in the reviews is an important factor in technology acceptance. In connection with the subcategory, Trust in the corrective power of the crowd, 16 experts declare their personal trust in information from online cruise reviews. Additionally, all 16 experts trust information that was collected by OCM technologies.

Content is located on a company-owned platform: One company operates a platform for online holiday reviews that exclusively contains reviews by company customers (Expert 8). In discussions with other experts, we learned that reviews from a company's own platform were valued as being more reliable. Hence the availability of a company's own platform facilitates overall trust (Expert 5).

Category "Perceived degree of information control"

Perceived loss of control over information: This category contains codes that indicate that experts fear losing control of important information provided by customers. Seen as intermediaries, cruise operators' information advantage over customers and other members of the value chain justifies their existence. The risk related to information collected by traditional word of mouth losing weight with the spread of OCM technologies is indeed a valid one as it implicitly threatens the intermediation role of a cruise operator (Papathanassis & Breitter, 2009:134). Independent of OCM technologies, experts from more traditional cruise companies might think that using Web 2.0 technologies would motivate customers to spread negative electronic word of mouth or fear being manipulated (separate Subcategory) (Expert 18, Expert 12 and Expert 13).

Mistrust in content platforms and content: A study by Papathanassis and Knolle (2011) shows that mistrust in a single Web 2.0 platform may lead to a rejection of all other platforms and their content. The experts confirm this observation. Further, content platforms have to prove their trustworthiness, e.g. by providing blacklists or possibilities of banning inappropriate online cruise reviews (Expert 5). Additionally, a general mistrust in information from the Internet leads to a negative influence on the overall trust in the technology (Expert 4).

Perceived advantage of the technology

The most complex factor is perceived advantage of the technology. The factor is based on Rogers' (2003) Innovation Diffusion Theory and is equivalent to the TAM factor of relative perceived usefulness

(Davis, 1989; Karahanna et al., 2006; Renaud & van Biljon, 2008; Costello & Moreton, 2009). In this study, the factor contains two major categories, which then combine more than 25 subcategories. In the following, the two major categories and a selection of important subcategories are presented.

Category "Perceived usefulness of the technology"

Perceived possibilities for discovering market or business opportunities: The participating experts perceive the possibility of using OCM technologies for effective segmentation of customers. For instance, the demands of families with children can be monitored by mining for reviews with matching user profiles, e.g. "Family, children, age of the writer between 20 and 40". Another possible segment of target groups can be a segmentation of first-time users and frequent users. By targeting different sources of reviews, e.g. in different countries and with different languages, the target group also becomes more diversified (Expert 8 and Expert 18).

The information collected with the help of OCM can be used to constantly develop and refurbish new cruise ships with new features. Precise information about customer expectations leads to more planning reliability for new features or for the design of cruise ships (Expert 5, Expert 8, and Expert 18).

The selective search for reviews about the products of competitors or third party providers gives information about their strengths and weaknesses. Similar to the analysis of a company's own products' patterns of success, weaknesses in the portfolio or the effectiveness of the marketing efforts of a competitor can also be revealed (Expert 8 and Expert 9).

OCM technologies enable companies or research departments to investigate and analyze a specific topic on a regular basis. Shifts in interests of customers can be monitored. Trends can also be revealed early (Expert 1 and Expert 5).

Perceived opportunities to increase yield: An overview of customer demands enables a more precise form of target marketing, e.g. by targeting group-specific advertisements within the company-owned booking platform or on search engines (nearly all experts, exemplary from Expert 2, Expert 8, Expert 11 and Expert 13).

Perceived value of information: In addition to the possible opportunities for use, overall perceived value of information is crucial. The majority of all experts perceive this information as having value. For instance, expert 16 is employed in a small business company with four active cruise ships and an executive target group; hence only few on-line holiday reviews can be found. The instant recognition of manipulated or negative reviews can help to reduce negative image effects.

Perceived potential to reduce costs: The use of OCM technologies can reduce the amount of less-qualified employees who previously did the manual online content research. Another factor in decreasing costs is the reduction of internal and external expenses for conventional surveys such as online or street surveys (Expert 8).

Category "Perceived drawbacks of the technology"

Perceived risks: Experts fear the abandonment of standardized or editorial supervision in Web 2.0 sources, which raises the risk of noisy or even faulty data (Expert 2 and Expert 11). The representativeness of reviews on the Internet is limited to those who actually use the Internet. Hence, the information generated by OCM technologies is not fully representative. According to the respondents from traditional companies, this is particularly relevant for cruise tourism, as the average customer age is well above the age of the average Internet user. Consequently, traditional cruise companies fear losing contact with existing customers, bound to their companies through traditional word of mouth communication before, during and after the cruise (Expert 3, Expert 4 and Expert 16). A possible justification for these concerns may be associated with the high degree of dependency on repeat customers characterising the more traditional, smaller cruise companies. In comparison to larger cruise operators (i.e. larger fleet and/or larger vessels), those do not possess the scale to compete in price terms and have fewer resources to attract first-time cruisers. Thus, fostering loyalty and concentrating on repeaters is arguably the more pragmatic competitive strategy for them. Repeaters effectively reduce the considerable capacity-related risk for cruise operators, have higher perceptions of value and are more likely to spread positive word-of-mouth (Petrick, 2004; Petrick & Sirakaya, 2004; Petrick et al., 2007; Hung & Petrick, 2011).

Perceived Costs: Concerns related to the costs of implementing new technologies can act as a deterrent for the adoption of novel technologies (Levy et al., 2005). In our study the experts critically considered the costs of purchasing, developing, licensing and operating OCM technologies. Furthermore, the potential benefits (e.g. regression cost reductions) cannot be readily quantified, because the existing financial reporting practices of cruise companies do not adequately account for quality management issues. For instance, the effort required to collect onboard questionnaire forms is not measured but simply incorporated into the daily tasks of the service personnel. In other words, this task (like many other quality-related activities) cannot be isolated as a cost, rendering its discontinuation as a non-visible benefit (Expert 12). The

challenge of measuring IT-related benefits and the impact they have on investment and/or adoption decisions has been extensively mentioned in literature (e.g. Brynjolfsson & Yang, 1996; Rai et al., 1997; Ward & Daniel, 2006; Frisk, 2007).

Perceived complexity of the new technology

The perceived complexity of new technology factor is derived from the IDT; its equivalent from the TAM research is perceived ease of use (Park & Gretzel, 2006). The importance of the factor is underlined in several studies (e.g. Tornatzky & Klein, 1982; Van Akkeren & Cavaye, 1999; Gefen & Straub, 2000). The factor contains all codes that represent technical factors, such as controllability of software, usability or perceived complexity of system integration. This factor solely includes major categories and is negatively related to the perceived acceptance of the OCM technology.

Category "Perceived controllability of technology"

The participating experts from less traditional cruise companies reported a satisfactory degree of controllability over possible new technologies; they backed up their statements by mentioning the daily usage of complex information systems, such as booking systems or ERP systems (Expert 1 and Expert 16). One expert from a traditional cruise company stated that a large amount of information technology is deployed even on more traditional ships, thus the company employs two full-time technicians to deal with OCM technologies (Expert 16). Even if the OCM technologies can be controlled within the participating companies, other cruise companies might face problems regarding the fast technology evolution of modern information technology (Expert 18 and Expert 19). Effectively, this would necessitate the acquisition and maintenance of new skills which could represent a significant cost factor, especially for smaller companies (Riemenschneider et al., 2003)

Category "Perceived capabilities of OCM technologies"

Experts with a non-technical background do not have the ability to fully evaluate the capabilities of OCM technologies. In particular, understanding the algorithms and techniques of natural language processing is difficult. The majority of experts that participated had a non-technical background; hence they might not be able to understand the origins of and appreciate the results of OCM software (Expert 12 and Expert 19).

Category "IT know how"

This category deals with the specific IT know-how with regard to integration and use of OCM technologies. Only two of the participating companies automatically integrate OCM information into existing quality management systems such as data warehouses and complaint management systems (Expert 5 and Expert 11). This observation conflicts with the asserted degree of technology controllability mentioned earlier. Furthermore, there appears to be a lack of knowledge about functionality and the basic concepts of natural language processing and semantic technologies among nearly all participants. Hence the actual complexity of the technology may have well been underestimated by the respondents. Although the IT know-how of the respondents does not necessarily represent that of the company as a whole, it still deserves consideration due to the hierarchical positioning of the interviewed experts. Pragmatism dictates that the examination of organisational decision-making cannot be fully detached from consideration of the background and personalities of the individual decision-maker. Accordingly, a number of authors have contended that the educational background and the IT know-how of the individual decision-makers are of paramount importance for the adoption of new technologies (Mehrtens et al., 2001; Grandon & Pearson, 2004; Levy & Powell, 2005); especially in SMEs (Duhan et al., 2001).

Perceived compatibility with company strategy

The structure of cruise companies varies according to target group, destinations and ship, which means their strategies vary, too. Thus, the corresponding factor 'perceived compatibility with the company strategy' can be seen as an adjustment factor for the specific corporate background of the participating decision-makers. In the research literature 'compatibility with strategy' can be found in the IDT (e.g., Levy et al., 2001; Grandon & Pearson, 2004). The factor is split between the compatibility of the present strategy and the perceived changes to strategy in the future.

Category "Perceived compatibility with strategy"

Perceived compatibility with research strategy: experts from companies that are more focused on a younger target group, such as families or younger singles are interested in gaining information from and about this specific customer group. Thus the usage of OCM technologies to gain information from online cruise reports is compatible with the company's strategy (Expert 1, Expert 5, Expert 8 and

Expert 16). Companies with a focus on more traditional consumer groups or niche markets report a strong misfit of OCM technology usage with the current market research strategy (Expert 3, Expert 4 and Expert 16). One company that plans to rejuvenate their target group realized the potential impact of online cruise reviews and is currently running through a process of strategy change (Expert 16).

Perceived dependency on Internet marketing: Participating experts from tour operators reported a high level of dependency on Internet marketing (Expert 6 and Expert 8). Like other experts, they underlined the importance of information from online cruise reports to personalized and enhanced Internet marketing activities. Hence, the perceived degree of dependency on Internet marketing is one variable in the factor of perceived compatibility with company strategy. Companies that have a high level of dependency on traditional marketing rely on traditional mouth-to-mouth communication and active promotion of their products in travel agencies. Moreover, the experts from top management consulting companies report that some more traditional cruise companies do not have a clear Internet strategy, which leads us to believe that they underestimate the importance of Internet marketing activities (Expert 18 and Expert 19).

Category "Perceived changes in market structure"

Perceived change of target group: The majority of interviewed experts perceive a new potential target group such as younger travellers or families with children. Especially decision-makers from companies with a younger target group have reported about the necessity for new strategies to cope with this situation (Expert 1 and Expert 16). This perception can be a facilitating factor that may result in adopting strategies that underline the significance of information from the Internet and the abilities of OCM technologies to gain important information about and from the target group.

Perceived shifts in Internet literacy: The notation "silver surfer" stands for a changing Internet usage pattern that results in a higher level of Internet literacy among the elderly. This factor might affect the strategic worth of information from the Internet. The majority of experts confirm this trend, leading to an increased importance of information from the Internet and consequently to a higher acceptance of OCM technologies. Cruise sector trade reports and marketing research partly support these findings. According to the Cruise Line International Association (CLIA, 2005; CLIA 2008), the average cruiser is in their mid-40s, well-educated, professionally active and earns over \$70,000. This profile challenges the notion of 'elderly cruisers'

altogether. Moreover, the same study highlights that 37% of cruisers are influenced by cruise websites, 34% by destination websites and 10% by internet advertisements. Often, the level of internet affinity by tourists or cruisers is equated with the percentage of those booking online, which is rather small. According to Peterson (2008), only 7% of the total cruise revenue is generated online. Nonetheless this indicator could be misleading, since a significant amount of potential customers (23%) consult online sources only to finalise the booking transaction offline (PhoCusWright-Hitwise, 2008; Reinke, 2008). An indicative survey conducted by the Cruise Research Society (2010), involving 93 cruise experts, concluded that over the next 10 years the majority of cruises are going to be sold online.

Social norms

Subjective norms refers to an individual's belief that an influential other person thinks a behaviour should be performed or not be performed (Fishbein & Ajzen, 1975). Studies support the importance of this factor, especially in the early stages of technology use, when users have limited direct experience from which to develop corresponding attitudes towards the technology. For instance a meta-analysis of this factor can be found in Schepers & Wetzels, (2007). The usage of OCM technologies enables companies to collect freely available information from the Internet without requiring the explicit permission of the review writer. The willingness to collect and use data might be affected by this argument. Hence the subjective norms of the decision-makers are an important factor in OCM technology acceptance. The factor solely includes major categories.

Category "Perceived concerns about data protection and privacy issues"

The usage of OCM technologies may cause concerns regarding adherence to data protection and privacy laws. In this category all codes regarding this aspect are consolidated. The participating experts commit themselves to strict compliance to all legal regulations. In Germany, the copyright and data protection laws contain distinctive regulations about the use of personalized data. The non-authorized use of personal data with clear names is forbidden (Hoeren, 2007). This finding is compliant with existing adoption research. A number of authors have argued that concern about confidentiality can inhibit the adoption of new technologies in organisations (Santarelli & D'Altri, 2003; Lawson et al., 2003).

Category "Perceived concerns about image- or customer-loss"

The participating experts do not perceive a significant possibility of harming the company's image. Neither do they expect to lose cus-

tomers due to usage of freely available data from the Internet. However, larger negative reactions of customers might affect the acceptance of OCM technologies in a negative way.

Proposed model of intended acceptance of OCM technologies

The factors presented above were identified as being influential on the intended acceptance of OCM technologies. Consequently, the dependant factor is called intended acceptance of OCM technologies. All factors were meaningfully organized into the model of intended acceptance of OCM technologies, which is presented in the following Figure 2. It is important to note that this model is an interpretative synthesis of the findings. Neither the factor weightings nor effects between the factors are part of the current research.

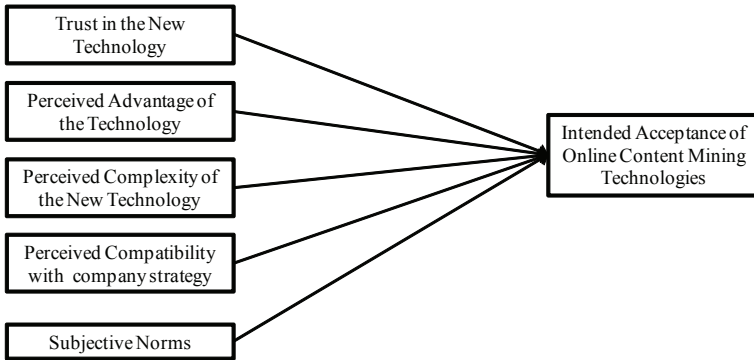


Figure 2. Model of intended technology acceptance of OCM technologies in the cruise industry

CONCLUSION

The presented factors and the model are derived from cruise industry practitioner responses and the selected research literature. Thus the results provide a good overview of the adoption readiness and acceptance of OCM technologies by the cruise industry. The model can be used as a benchmark to measure a company's individual readiness for OCM technologies and their strategic readiness to incorporate information from Web 2.0 sources. In combination with the description of major technologies, the proposed model can be used as a guideline to integrate OCM technologies in the processes of cruise companies by helping decision-makers consider major influential factors. For instance, the complexity factor provides important information about major challenges of technology deployment and usage. The factor "perceived advantage of technology" provides information about im-

portant usage possibilities, e. g. enhanced customer segmentation or idea generation from online cruise reports. The identified moderating variables provide decision-makers with useful information that helps staff OCM projects with qualified personnel and cope with concerns by traditional market research.

In line with the need for a better understanding of the handling of online consumer or travel reviews for business practice, the presented research resulted in a novel model of perceived acceptance of OCM technologies in the cruise industry. The cruise industry poses an opportunity to explore new technology adoption due to its inherent characteristics and contradictions. On the one hand it is a highly information-intensive sector, with a tradition of information technology dependence for operational survival. On the other hand, information technology represents a small fraction of the overall investment, and attitudes towards adopting new technologies are rather conservative. Presumably, this is mainly a result of the demographic characteristics of the target group, the SME-tradition of cruise operators and their historical dependence on non-electronic distribution channels. In short, one is faced with a (theoretically) considerable potential for OCM technology adoption, under conditions of historical, attitude-related anti-adoption inertia. In turn, those conditions offer a suitable testing basis and development platform for improved adoption models. The qualitative research approach was improved by the incorporation of an Internet based prototype of an OCM system. The usage of the prototype enhanced the effectiveness and efficiency of the expert interviews, through the provision of a common reference point. It enabled a basic understanding of the technological scope of the research subject, reducing the risk of misunderstanding, misinterpretation and non-response. On this basis the interview discussion ran smoothly, making the most of the respondents limited time frame.

The area of OCM is in itself a relatively novel, multidisciplinary topic, combining technological and managerial aspects. The focus here is a managerial one and our findings are subjected to the limitations of the methodology employed and the respondents involved. The proposed model has a strict tentative character and is limited to information from the mainly European and German experts, their understanding of the questions asked and interpretation of the given answers by the authors.

Moreover, the examination of OCM potential within the under-researched and specialized context of the cruise industry is coupled with both opportunities and challenges (Papathanassis & Beckmann, 2011). Our findings are compatible with those encountered in technology acceptance literature. While the amount of available literature on technology acceptance and innovation diffusion is overwhelming, the opposite is the case for the cruise sector. Academic research on the

cruise sector and particularly on the domain-specific role of information systems is very limited (Papathanassis & Beckmann, 2011:165). Ultimately, the interdisciplinary and exploratory nature of this paper necessitates a trade-off between the domain-specific empirical scope and the extent of generic literature coverage. We have to admit that our review of literature may indeed be limited, doing injustice to the extensive research on technology acceptance in general. Then again, the aim here was not to provide a conclusive overview of an established research area, but to initiate the exploration of a novel technology's potential in a specialized business domain.

Finally as already mentioned the model proposed was derived following a qualitative approach and thus has a tentative character. The resulting hypotheses have not been tested and the factor weightings were not researched. In addition, technological aspects such as software usability or IT system integration, and the relevance of OCM in other tourism or business domains have not been addressed here. All the above represent opportunities for further research on the area of OCM, which we hope this paper will encourage.

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