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## **Information and communications technology and market segmentation in tourism: a review**

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**Abstract.** Information and communication technologies have had a profound effect on tourism marketing. Many authors have discussed how the development of ICT has affected tourism research and practice but little attention has been paid to segmentation despite its importance to marketing. By reviewing segmentation articles published since the year 2000 in three highly regarded tourism journals this study aims to ascertain the current state of research examining segmentation in the context of information and communication technologies. The results show that studies focusing on the topic are still very rare. This study provides both researchers and the industry with a review of what has been done and of the main findings and issues. It also contributes to the literature by focusing not only on data-driven segmentation studies or segmentation methodology but also by including other studies discussing the topic.

Keywords: segmentation, eTourism, ICT, Internet, literature review

## 1. Introduction

Information and Communication Technologies (ICT) have been transforming tourism globally since the 1980s (Buhalis & Law, 2008). Buhalis and Law (2008) also state that since 2000 the truly transformational effect of ICT has been witnessed, giving scope for the development of a wide range of new tools and services which have transformed the ways tourism companies do business and how tourists seek information and experience a destination. The Internet is regarded as a valuable tool for consumers and suppliers to use in communication, online purchasing, and information dissemination (Law et al. 2010). The popularity of the technology is apparent in the increasing rate of online transactions and the number of online users (Law et al. 2010).

Segmentation is one of the key concepts of marketing. Bennett (1995, pp.165-166) define market segmentation as the “process of subdividing a market into distinct subsets of customers that behave in the same way or have similar needs.” The basic idea in market segmentation is to identify groups of tourists who are similar in some respect, for example, travel behavior or motivations. The groups have to also differ from each other based on some given factor (Konu, 2010). Segmentation can be seen as a three-part process, consisting of market segmentation, market targeting, and market positioning (Kotler & Keller, 2006). By finding and choosing the correct segment or segments a company can gain competitive advantage. There are two different ways of doing segmentation: common sense and data-driven. In common sense segmentation the grouping criteria of segments are known in advance. These may include age, place of residence, interest in different kinds of holidays etc. In data-driven or post hoc segmentation quantitative techniques of data analysis are applied to the data in order to derive a grouping (Dolnicar 2002). A combination of the two may also be used.

According to Ma and Law (2009), an examination of past research efforts can help researchers understand how the tourism field develops. Despite increasing demand for research on ICT little academic research has been presented on the effects of ICT in market segmentation. According to Xiao and Smith (2006), tourism academic journals are important communication channels for researchers. Because there are more than 100 tourism related journals in the world it is practical to analyze the publications in top tourism journals (Ma & Law, 2009). In this study segmentation articles from three prestigious tourism journals are reviewed in order to examine the role of ICT in market segmentation studies in tourism. This study aims to systematically review earlier market segmentation studies in tourism from the perspectives of Internet marketing and ICT, thus focusing on a very important but nonetheless little researched topic. Special attention is paid to different phases of market segmentation research from introduction and theory to limitations and future research and further to the role of ICT in these different aspects of market segmentation studies.

eTourism can be defined as ICTs in tourism (Buhalis & Law, 2008). Buhalis and Law (2008) reviewed 149 published articles making a critical contribution to the field of eTourism research and identified three main axes: consumer and demand dimensions; technological innovation; industry function. In their review Buhalis and Law (2008) also state that it is interesting to observe the many

different ways the web is used by different market segments but present only one study relating to segmentation ([Cotte et al., 2006](#)).

On the basis of the study by [Buhalis and Law \(2008\)](#) it could be argued that segmentation has not yet made a critical contribution to the field of eTourism research. However, segmentation, targeting, differentiation, and positioning are all acknowledged to be key components in effective digital marketing ([Chaffey et al. 2006](#)). Despite extensive research into segmentation and eTourism it is unknown how these two topics intertwine. According to [Dibb \(2004\)](#) and [Dibb and Simkin \(2009\)](#), on-line segmentation and the impact of the Internet on the application and role of segmentation is one of the priorities in future segmentation research. Segmentation has also been acknowledged an important topic in website development ([Perdue, 2001](#)).

There have been some advances in market segmentation because of development of ICTs. For example different recommendation systems such as collaborative filtering ([Linden et al. 2003](#)) have made the profiling of customers more accurate than it has ever been before. Through online systems more and more data is gathered by companies and the way this data is analyzed will determine the competitiveness of companies. This study aims to find out how the possibilities of ICTs in market segmentation of tourists have been adopted by tourism researches and how ICTs have changed the way market segmentation is conducted.

## **2. Theory of market segmentation**

According to Kotler and Keller (2006) effective target marketing requires that marketers identify and profile distinct groups of buyers who differ in their needs and preferences and select one or more market segments to target. For each target segment the distinctive benefit(s) of the company's market offering must be established and communicated.

Kotler and Keller (2006) divide segmentation into two approaches according to the variables used to segment consumer markets. Consumers can be segmented according to descriptive characteristics or behavioral considerations. For market segmentation to be useful, segments must rate favorably on five key criteria. Segments must be measurable, substantial, accessible, differentiable, and actionable (Kotler & Keller, 2006).

Even though segmentation can be regarded as one of the most important marketing management objectives (Kotler & Keller, 2006) there has been relatively little discussion about the role of market segmentation in tourism in the Internet marketing era. The question is no longer whether a company should deploy Internet technology but how to deploy it (Chaffey et al. 2006).

Marketing has changed since Wendell Smith first presented a theoretical concept for market segmentation in 1956. ICT, and especially the Internet, have been crucial in transforming the way companies do marketing (Chaffey et al. 2006). Chaffey et al. (2006) state that Internet marketing is more interactive, intelligent, individualized, integrated, and independent of location than conventional marketing. According to Buhalis and Law (2008), ICTs empower consumers to identify, customize, and purchase tourism products and also support the globalization of the tourism industry.

### 3. Market segmentation reviews in tourism and ICT

Segmentation has been a popular topic and a cornerstone of marketing research for decades. In the travel and tourism industry, too, academics have embraced the concept of market segmentation, which can be seen in the volume of research published in dozens of journals. Literature reviews have been significant in helping tourism researchers to make sense of what has been accomplished in the field and to perceive what the latest developments in research are. Literature reviews also help to identify research gaps.

Market segmentation studies are typically quantitative, even though some qualitative or mixed-methods studies can be found. Knowledge of the earlier literature is often essential in conducting quantitative studies. Almost all authors studying segmentation have conducted some form of literature review of earlier segmentation studies as a part of their own studies. These are usually limited in scope, consisting only of studies directly related to the topic at hand. Some studies have focused on reviewing prior segmentation studies (e.g. Dolnicar 2002). Even though segmentation reviews have been conducted outside the field of tourism (e.g. Foedermayr & Diamantopoulos, 2008) in this study the focus is on market segmentation in tourism.

For example, [Frochot and Morrison \(2001\)](#) reviewed the basic principles underpinning benefit segmentation, its applications to travel and tourism, and the methodological issues associated with segment identification. They reviewed altogether 14 tourism benefit segmentation studies published 1980-1998. At the end of their study and Morrison (2001) listed characteristics, issues, potential advantages, and disadvantages of benefit segmentation. One issue, for example, is that there is no consensus among researchers on benefits, which means that there are three different ways to do benefit segmentation: attribute based, psychologically based and a combination of these. There are also some methodological issues regarding the absence of consensus on one best method; researchers have used either factor-cluster analysis or only cluster analysis.

A review of data-driven market segmentation in tourism by [Dolnicar \(2002\)](#) focuses on segmentation studies in tourism that use cluster analysis to find segmentation solutions as cluster analysis was clearly the most used method of segmenting tourists. Dolnicar included in her study 47 publications published 1981-2000 from 15 different sources. She examined among other things data formats used in segmentation studies, data preprocessing, hierarchical and partitioning algorithms used as well as the number of cluster distributions.

[Dolnicar \(2006\)](#) also reviewed data-driven market segmentation studies in tourism published in tourism journals from 1981 until 2005. She examined the studies using frequency analysis to ascertain whether changes have taken place over the past decades and derived development opportunities by comparing methodological recommendations regarding segmentation procedures with the approaches typically taken in tourism research.



- How many ICT and market segmentation related studies have been published since 2000 in main tourism marketing and research journals?
- How can the effects of ICT on market segmentation in earlier studies be classified?
- How important a role has ICT has played in market segmentation studies?
- What topics have been studied in ICT and segmentation?

#### **4. The study method**

To review segmentation studies three high ranked tourism marketing and research journals were examined: the Journal of Travel Research (JTR), the Journal of Travel & Tourism Marketing (JTTM) and Tourism Management (TM). There are two reasons for choosing these journals: first these journals have published a large number of segmentation studies during the last ten years and second they are ranked highly in different studies rating tourism and hospitality journals (McKercher, Law & Lam, 2006). Leung and Law (2007) reviewed information technology publications from 1985 to 2004 in leading tourism journals and included studies from Tourism Management, the Journal of Travel Research and Annals of Tourism Research. However, the publication search done in this study regarding studies published in Annals of Tourism Research resulted in only six studies related to segmentation meaning that Annals of Tourism Research was categorized as a non-critical journal for this study.

The search engines provided by the journal publishers were used to find segmentation studies from the aforementioned three journals. The word 'segment' was used to find relevant studies. The search engines automatically included all the studies containing the word 'segment' or a word beginning with 'segment' in their topic, abstract or keywords. Only studies published since 2000 were included in order to examine only the most recent research on the topic. Moreover, only few studies were published on the topic before 2000. The studies were searched during a two-day period from October 20<sup>th</sup> to October 21<sup>st</sup>, 2011. This search resulted in a total of 188 segmentation related studies published since the beginning of 2000. Forty-eight studies were published in TM, 57 in JTR and 83 in JTTM. If a study was published online before printing it was included in this study and the citation was updated whenever applicable. Both full research articles as well as research notes were included.

In order to ascertain the connection between ICT and market segmentation the aforementioned 188 articles were studied by going through them with ICT related keywords. The following words were searched from the texts: ICT, Internet, web, www, social media, e-mail, email, eTourism, e-tourism, online, technology, data, and PC. All instances were examined manually and only those relating to ICT were included. Of the 188 studies a total of 74 studies contained mentions of ICTs, the Internet, or had any connection to eTourism. Nineteen studies were published in JTR, 17 in JTTM and 22 in TM. The numbers of ICT and segmentation related studies published annually in the three journals are presented in Figure 1.

The next step was to examine which papers studied market segmentation. Altogether 58 papers out of the 74 market segmentation studies were classified as market segmentation papers for the purposes of this study. Most of the studies were focused on finding and comparing different market segments but some papers that did not segment tourists were nonetheless directly related to market segmentation, such as literature reviews (e.g. Tkaczynski & Rundle-Thiele, 2011).





independent visitor segments, international and domestic travelers, in Wellington and Rotorua, New Zealand. In their literature review they discuss the Internet as an information and booking channel and the issues of trust and apprehensiveness in the use of the Internet for travel transactions, referring to how to encourage travelers also to book instead of just looking.

According to [Brey et al. \(2007\)](#), Internet growth has changed marketing to lodging consumers significantly. [McKercher \(2008b\)](#) used the results of a keyword search on on-line tourism abstract databases to justify the contribution of distance segmentation. [Spencer and Holacek \(2007\)](#) argue that earlier results of fall tourism are limited because the data they were based on was collected between 1973 and 1991, thus among others predating the advent of the Internet.

It should be noted that some authors acknowledge the importance of the Internet as they mention it when presenting the study topic or marketing channels of tourism companies but do not include anything Internet related in the actual study (e.g. [Weaver & Lawton, 2002](#); [Tkacynski et al. 2009a](#)). The Internet is sometimes also mentioned in reviews of earlier studies (E.g. [Wilton & Nickerson 2006](#)).

### **5.3 Data collection**

One part of segmentation most affected by the Internet and ICT is data collection. Almost 25 per cent of the studies reviewed used some sort of ICT enabled data collection method. Most studies used online or e-mail questionnaires to collect data.

[Shani et al. \(2010\)](#) used among other variables two different websites to analyze the information sources of different spending segments of golf tourists. However, they did not find any significant differences between segments regarding information sources.

[Tchetchik et al. \(2009\)](#) used global positioning system units to collect time-space data on visitors to a heritage site in Israel and to segment the visitors on the basis of the data collected. [Koc and Altinay \(2007\)](#) used statistics by the Turkish Ministry of Culture and Tourism released through the Internet and [Tkacynski and Rundle-Thiele \(2011\)](#) reviewed earlier event segmentation studies and observed that only three studies out of 120 academic event segmentation papers reviewed collected data using online methods.

### **5.4 Information / booking channel**

In several studies the Internet was mentioned as one of the information or booking channels, and was used to differentiate tourists according to the information sources they used. For example, [Dolnicar and Laesser \(2007\)](#) found that people using agencies to book holidays used the Internet less than those not using agencies. [Freeman and Selmi \(2010\)](#) studied the accessibility of Internet to the disabled tourists segment. [Horneman et al. \(2002\)](#) found that the Internet was one of the least used sources of information among senior travelers.

Pearce and Schott (2005) examined the Internet both as an information channel as well as a booking channel, finding several differences between international and domestic travelers in New Zealand. They also studied how issues regarding Internet affected channel selection.

According to the study by Sarigöllü & Huang (2005), adventurers use the Internet as information channel more than other segments. Simpson and Siguaw (2008) present the Internet as a word-of-mouth channel, especially social networking web sites. Sung (2004) on the other hand found that the Internet was not the most important information source for any segment.

Park and Kim (2009) divided information sources into off-line external and on-line external information sources and internal information and word-of-mouth. On-line information sources consisted of portal website, online travel agency, online travel community, and state/city website.

Pearce et al. (2009) examined differences in package, package plus and independent categories regarding Internet access, but found no differences. They also examined how different information sources affect how tourists made travel arrangements and their booking behavior. Kim and Prideaux (2005) found in their study that Australian tourists tended to use the Internet as an information source more than other nationalities in their study.

## **5.5 Other**

In one study by Gilbert and Wong (2003) ICT was regarded as a service during travels. They found that availability of in-flight Internet, e-mail, fax or phone facilities were the least important things for airline passengers when they were asked about their expectations of flight services.

## **5.6 Discussion / conclusions**

Many papers reviewed in this study included eTourism related discussion or conclusions at the end of the article. Brey et al. (2008) discussed the importance of technology for the business traveler segment. Perce and Schott (2005) concluded that for the tourism companies they examined the Internet could be used to book transportation but not accommodation (Pearce and Schott 2005). Sarigöllü and Huang (2005) suggested dedicated web sites to reach and promote materials to the adventurer segment. In their study Internet was an important information channel also for the culturally oriented urbane segment. Beritelli et al. (2007) argued that WWW has not replaced other sources of information but simply complements existing information sources. For the long-haul international travelers of their study the Internet was an important source of information because of the high risk attached to travel.

Some authors also discussed the meaning of the Internet as an information source. For example, Weaver and Lawton (2011) pointed out the question of overlap in information sources. They wondered if, for example, online newspapers should be categorized under “Internet” or “newspapers”. McKercher (2008a) explained some of the differences between long and short-haul pleasure tourists by analyzing the lowest online economy airfare from gateway centers to Hong Kong. Milner et al.

(2000) propose Internet-based marketing to allow Alaskan and other circumpolar business to directly access the Japanese market in a manner that many Japanese might find comfortable.

Many authors (e.g. Sung et al. 2001) regarded the Internet as an important channel for reaching certain segments, especially those people who like to plan their holidays themselves. For example, Kim and Prideaux (2005) stated that the preference of Australian tourists for the Internet as a major information source implied a need for web pages containing detailed information on tourism destinations and resources in Korea.

### **5.7 Further research / limitations**

It is alarming how few studies discussed ICT as an area for further research or as a limitation. [Beritelli et al. \(2007\)](#) suggested that the further examination of the relation between the use and importance of the Internet and friends and relatives as sources of information was necessary. The question of the role of previous trips also needs to be further explored. They also concluded that it is unknown what brings people to a website for information collection and travel booking. Differentiating lookers and bookers, according to [Beritelli et al. \(2007\)](#), is an important research topic for the future.

In limitations Kim (2008) observed that women were over-represented in the survey responses and suggested that it could be because of online-survey method used. This was also observed by Kim et al. (2007).

## 6. Discussion

Buhalis and Law (2008, pp. 609) state that “since the year 2000 we have been witnessing the truly transformational effect of the communications technologies.” This effect cannot be seen in market segmentation studies in tourism. Only three studies could be categorized as focusing on ICT and market segmentation. [Brey et al. \(2007\)](#) introduced a new segmentation base by examining willingness to supply contact information to websites. [Beritelli et al. \(2007\)](#) segmented the Swiss traveling population according to the importance of WWW as a source of information and Kim et al. (2007) examined gender differences in online travel information searches. The reasons why only three papers focusing on the topic have been published in the three journals included in this study since 2000 are beyond the scope of this paper but the results are nevertheless interesting.

Information and communication technologies present many opportunities for market segmentation. Despite an abundance of academic papers on market segmentation in tourism there are only few focusing on ICT. This study is the first to examine the topic in detail and differs from previous segmentation reviews by not focusing only on data-driven segmentation studies but by examining the topic with a wider perspective. This study provides a detailed analysis for market segmentation researchers and practitioners of the effects and opportunities of ICT for segmentation.

The objective of this paper was to review market segmentation studies in tourism from the perspective of Information and Communication Technology. Of the 188 studies reviewed for this study only 58 could be regarded as market segmentation studies influenced by ICT. Research on eTourism is a growing trend and the results of this study support this. As can be seen from Figure 1, more ICT related market segmentation studies in tourism were published in the second half of the last decade than in the first half. Further examination showed that most of the aforementioned 58 studies used the Internet as a data collection method or as a single source of information when comparing information search behavior. These studies demonstrate that the Internet has changed segmentation by providing new bases to be applied to segment tourists instead of well established segmentation variables such as socio-demographics or travel motivations.

The effects of ICT on segmentation theory have been very limited. According to the results of this study it seems that the greatest contribution of ICT to the theory comes from new opportunities for different segmentation bases. ICT can also be used to measure segmentation efficiency very precisely by using, for example, clickstream data from a website. Segmentation methodology was beyond the scope of this paper but it can be stated that ICT has clearly affected it by providing new ways of analyzing data and enabling data mining as a segmentation approach.

The Internet is no longer merely one information channel among others. In many western markets the Internet is the main source of information and booking for tourists. ICT has changed how tourists plan and book their holidays, what they do during their holiday and what they do after the holiday. These changes in tourism behavior need to be examined more closely from a segmentation

perspective. For a segmentation solution to be efficient, more information is required on how to target different segments in the Internet or on the differences between segments regarding their online information search behavior.

Sung (2004) found that the Internet was not the most important information source for any segment when classifying adventure travelers. This only stresses the change that has happened among consumers because of ICT as similar results, especially in western countries, would be very difficult to obtain nowadays. Spencer & Holacek (2007) also state that ICT has changed customer behavior in a way that makes using results of older segmentation studies questionable. However, the rate of ICT adoption is very high at the present moment in many Third World countries, where the number of Internet users is increasing rapidly. Market segmentation studies conducted in markets with high rates of growth in ICT usage should be interpreted with caution as they are probably not very stable over time.

Social media, according to Sigala et al. (2012, pp. 1), is “fundamentally changing the way travelers and tourists search, find, read and trust, as well as collaboratively produce information about tourism suppliers and tourism destinations.” However, in light of the papers reviewed in this research, the market segmentation literature on tourism connected to social media is almost non-existent. This can be regarded as a crucial research gap in the segmentation literature as social media is becoming more and more important for travelers as well as for tourism companies.

A wide range of new tools and services have been developed since 2000 (Buhalis & Law, 2008). For example, tourism companies have widely adopted Google Analytics and its more expensive competitors to measure website use. Facebook also has its own tools to measure traffic on a Facebook page. However, these new tools are not to be seen in the papers reviewed in this study, pointing to a gap in research. These tools could be used to ground market segmentation literature on a more solid empirical base as suggested by Foedermy and Diamontopoulos (2008). Segmentation could also provide valuable insights into lowering cost-per-click advertisements and increasing click-through-rate. Clickstream analysis could also provide companies and especially researchers with new ways to collect data for segmentation purposes instead of online and e-mail questionnaires often used in tourism research. Many tourism companies are already using these tools, making it important for researchers conducting market segmentation to work closely together with companies.

Yet another important topic seems to be combining segmentation with website design and development (Perdue, 2001). Web marketing can be regarded as consisting of two phases: first, how to get users to a website and second, how to get website users do what they are required to do, thus increasing the conversion rate. Segmentation is crucial in both phases, first in marketing the website to the right people in the right channels and second in designing and developing the website to serve the users as efficiently as possible, creating ways for marketers to customize their offerings (Gretzel et al. 2004).

In many other contexts ICT and the Internet are regarded as important topics for future research. This has not been the case in segmentation in tourism, as can be seen from this review. Searches conducted on other journals not included in this study such as Information Technology & Tourism resulted in only a few non-critical hits. The Internet also has its own limitations, which are seldom discussed in the segmentation studies. For example, the study by Dolnicar et al. (2009) shows that neither pure online surveys nor pure paper surveys administered through regular mail are unbiased.

Segmentation can be regarded as a three-part process, involving the segmentation itself, market positioning and market targeting. It is clear that the main focus in the segmentation process has been on segmentation itself, and studies relating to positioning and targeting are not as numerous. The Internet and ICT provide new tools and ways for companies to position themselves and target the right customers and measure the success of these efforts, but these are very rarely discussed in the literature.

This study provides researchers interested in studying market segmentation in the eTourism context with a literature review of how ICT has affected segmentation. For tourism practitioners this study also reviewed some of the main findings of earlier studies and explores what it means to segment customers in an online context.

## **7. Limitations and opportunities for future research**

This research synthesized the main literature regarding market segmentation and eTourism. However, it should be noted that there are a few limitations. ICT is a continuously developing topic and it is quite possible that studies conducted by practitioners have not been published in the academic literature. Much academic literature was not included in this study as only three tourism journals were examined. These three journals, however, have published a large number of segmentation studies and are among the top ranked tourism journals (McKercher et al. 2006). Limiting articles only those that include the word segmentation may have excluded some articles important to the topic, especially a priori studies, as they may not always be recognized as segmentation studies. To the best of the author's knowledge, no studies essential to reviewing the topic were omitted from the study. The focus of this study was on leading tourism marketing and research journals and publications such as the Journal of Information Technology & Tourism were not included.

Some studies have been published which are important to the topic of ICT and segmentation, but were not included in this review because they were published before 2000 or did not include the word segmentation in the topic, abstract or among the keywords. For example, Bonn et al. (1998) conducted a study to examine sociodemographic and behavioral characteristics among users and non-users of Internet as a pleasure travel planning tool. These limitations are not severe, as in ICT the older publications are mostly outdated as the field is developing so rapidly.

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**Table 1.** Earlier market segmentation reviews in tourism

Author	Topic	Number of studies reviewed	Studies included	Focus
Frochot & Morrison, 2001	Benefit segmentation	14 studies	author chosen key studies	<ul style="list-style-type: none"><li>• Principles of benefit segmentation</li><li>• Application of benefit segmentation to travel and tourism</li><li>• Methodological issues associated with segment identification</li></ul>
Dolnicar, 2002	Data-driven market segmentation in tourism	47 studies	studies conducting market segmentation using cluster analysis	<ul style="list-style-type: none"><li>• Data collection and analysis</li><li>• Reliability and validity</li><li>• Recommendations for improvement</li></ul>
Dolnicar, 2006	Data-driven segmentation studies in tourism research	75 studies	Papers from 1981 until 2005 published mainly in JTR, TM and JTTM.	<ul style="list-style-type: none"><li>• Investigating developments over the past 24 years in data-driven segmentation</li><li>• Providing outlook on directions of further development</li></ul>
Tkaczynski & Rundle-Thiele, 2011	Event segmentation	120 studies	The authors of the articles had aimed to classify event attendees based on at least one of the segmentation bases outlined by Kotler (1980).	<ul style="list-style-type: none"><li>• Segmentation bases</li><li>• Classifying variables</li><li>• Data collection and analysis</li><li>• Sample size</li></ul>

Table 2. ICT in market segmentation studies in tourism

Significance of ICT, the Internet, and eTourism	Common sense (N=26)	Data-driven (N=25)	Other (N=7)	Definition of the category
Theme	1	2	0	Study is focused in the context of eTourism
Introduction / theory	11	7	5	eTourism is a part of introduction or included in the theory
Data collection	5	6	2	The Internet is used to collect data for the study
Information / booking channel	15	13	1	The Internet is used as information or booking channel when comparing differences between segments.
Travel service	1	0	0	The Internet or ICT is regarded as part of a destination or travel experience.
Discussion / conclusions	8	6	2	eTourism is part of the study's discussion or conclusions.
Future research / limitations	2	2	0	eTourism is included either in future research or limitations.

Table 3. ICT in market segmentation studies published in Journal of Travel Research 2000-2011.

Study	Category	Theme	Introduction / theory	Data collection	Information / booking channel	Other	Discussion / conclusions	Future research / limitations
Horneman et al. 2002	CS				x			
Johns & Gyimóthy 2002	DD		x					
Weaver & Lawton 2002	DD		x		x			
Dolnicar & Leisch 2003	DD				x			
Bieger & Laesser 2004	DD				x			
Sung 2004	DD				x			
Pearce & Schott 2005	CS		x		x		x	
Sarigöllü & Huang 2005	DD				x		x	
Wilton & Nickerson 2006	CS		x					
Dolnicar & Laesser 2007	CS		x		x			
Dolnicar & Leisch 2008a	CS			x				
Matzler et al. 2008	CS			x				
Simpson & Siguaw 2008	CS		x		x			
Gil & Ritchie 2009	CS				x			
Tchetchik et al. 2009	DD			x				
Tkacynski et al. 2009a	DD		x					
Freeman & Selmi 2010	CS				x			
Shani et al. 2010	CS				x			
Dolnicar et al. 2012	DD			x				

Table 4. ICT in market segmentation studies published in the Journal of Travel & Tourism Marketing 2000-2011.

Study	Category	Theme	Introduction / theory	Data collection	Information / booking channel	Other	Discussion / conclusions	Future research / limitations
Dolnicar et al. 2000	DD		x					
Faranda & Schmidt 2000	O						x	
Milner et al. 2000	CS						x	
Sung et al. 2001	DD						x	
Andereck 2005	CS		x					
Beritelli et al. 2007	DD	x	x		x		x	x
Pearce & Sahli 2007	O		x	x	x		x	
Kim & Agrusa 2008	CS				x			
McKercher 2008a	CS						x	
Boo & Jones 2009	DD				x		x	
Chen et al. 2009	DD				x			
Park & Kim 2009	CS				x		x	
Pearce et al. 2009	CS				x		x	
Ritchie et al. 2010	DD			x				
Li et al. 2011	DD				x			
Sun & Qu 2011	CS		x					x
Weaver & Lawton 2011	CS		x		x			x

Table 5. ICT in market segmentation studies published in Tourism Management 2000-2011

Study	Category	Theme	Introduction / theory	Data collection	Information / booking channel	Other	Discussion / conclusions	Future research / limitations
Gilbert & Wong 2003	CS					x		
Money & Crotts 2003	CS		x					
Becken & Gnoth 2004	DD						x	
Lee et al. 2004	DD				x			
Kim & Prideaux 2005	CS		x		x		x	
Trauer 2006	O		x					
Brey et al. 2007	DD	x	x	x			x	x
Hu & Yu 2007	DD				x			
Kim et al. 2007	CS	x	x	x	x		x	
Koc & Altinay 2007	O			x				
Molera & Albaladejo 2007	DD				x			
Spencer & Holacek 2007	CS		x					
Weaver & Lawton 2007	O		x					
Dolnicar & Leisch 2008b	CS			x	x			
Dolnicar et al. 2008	DD			x				
Füller & Matzler 2008	DD			x				
Galloway et al. 2008	CS				x		x	
McKercher 2008b	DD		x					
Tkaczynski et al. 2009b	O		x					
Dey & Sarma 2010	DD				x			
Tangeland & Aas 2011	CS			x				

Tkaczynski O  
& Rundle-  
Thiele  
2011

x

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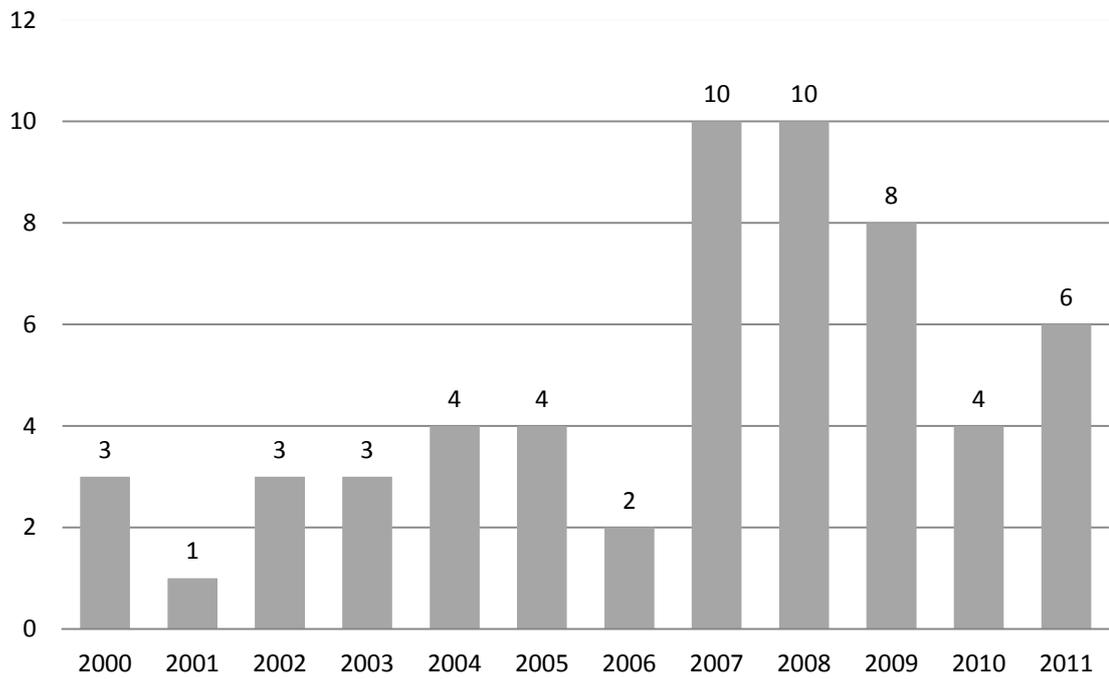


Figure 1. Numbers of eTourism and segmentation related studies published annually in JTR, TM and JTMM since year 2000.