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The changing role of ICT competitiveness: the case of the Slovenian hotel sector

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The purpose of the article is to survey the role of information and communication technology (ICT) for hotel firm's competitiveness. Based on competitive advantage factor (CAF) and resource theory, this article empirically tests ICT as one of several possible competitiveness factors. The research is focused on analyse of ICT competitiveness position over time, with special attention to different generations of ICT technologies. An electronic survey instrument has been used to collect Slovenian hotel manager's opinion on competitiveness resources in 2000 and 2010. Hypothesis testing and cluster analyses has been applied, SPSS was also used. The article's findings indicate that hotels need time to recognise the competitiveness potential of every new resource, and once they start to implement it its importance may change over time. Some firms might be slower in implementing new ICT resources, yet, over time, the resource use converges among the firms. The process is repeated with every new ICT generation. The study informs firms and researchers on practical and research issues forthcoming with ICT progression. Research results directly benefits hotel managers by providing actual information on how to employ different generations of ICT. This contribution is a novel way of connecting a firm's competitiveness with different web generations over time.

Keywords: information and communication technology (ICT) evolution; ICT as a competitiveness factor; cluster analyses; hotel industry

JEL classifications: O31, O33, L83, L86

1. Introduction

Nowadays, companies are competing in challenging markets and facing an unpredictable, complex, and competitive customer oriented environment. To survive in such an environment, they are forced to find ways to become more agile and more adaptable to market needs than their competitors. Obviously, the main challenge for firms is to attain and sustain their competitive position. Information and communication technology (ICT) has become one of the backbones of today's society, reshaping the modalities of lifestyles and business practice, and is, therefore, a CAF for many firms. This is the focus of theoretical polemics. Does ICT contribute to competitiveness and firm profitability, and if so, how? Firms know that investments in ICT usually require additional costs and efforts, creating doubts about its (short-term) profitability.

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The literature indicates three different relationships (Breznik, 2012). First, some studies (Gursoy & Swanger, 2007; Ray, Barneyand, & Muhanna, 2004; Spyros, Euripidis, & Vasiliki, 2011) consider different ICT elements to be important competitive advantage resources (CARs). Researchers from this school of thought argue that ICT's impact on competitiveness can be either direct or indirect (Breznik, 2012) and perceive investment in ICT as facility to enhance productivity and reduce costs (McAfee & Brynjolfsson, 2008; Piccoli, 2004). In contrast, some scholars argue that there is no significant impact from ICT investments on firms value, firm performance and its competitive advantage, generally supporting the ICT paradox theory (Aral, Brynjolfsson, & Wu, 2006; Carr, 2003, 2004; Lee & Connolly, 2010; Willcocks & Lester, 1999). Moreover they claimed that 'ICT has not changed the fundamental nature of the business-cycle and the instability of investment behaviour' (Freeman, 2001, p. 115). The third, quite ancient, view (Kettinger, Grover, Guha, & Segars, 1994) plead that ICT has a negative impact on a firm's performance propounding that in a post-ICT implementation period firm mostly experience competitive declines either in market share or profit.

Despite the fact that several studies have examined the impact of the ICT in the hospitality sector (Cho & Olsen, 1998; Siguaw, Enz, & Namasivayam, 2000; Ham, Kim, & Jeong, 2005; Mosleh & Shannak, 2009), this sector has often been accused of being a technological laggard (Namasivayam, Enz, & Siguaw, 2000) and is perceived as being conservative in the adoption of new technologies. The low rate of ICT use can be associated with difficulties in the sign-up process and technology use (Sigala, 2013) as well as barriers to adoption due to lack of resources and poor communication between technology vendors and their client hotels (Reino, Lamsfus, Salas, Torices, & Alzua-Sorzabal, 2013).

However, the orientation toward customers and benefits arising from the functionalities of ICT that has fundamentally changed the ways of interaction and communication (Keller, 2009), are stimulating a growing interest in ICT within the information intensive hospitality sector (Buhalis, 2003). Newer tourism studies show that ICT improves performance in the tourism business (Buhalis & Zoge, 2007; Garbin Praničević, Alfirević, & Indihar Štemberger, 2011; Mihalič & Buhalis, 2012; Sigala, Airey, Jones, & Lockwood, 2004). Moreover, Tsai, Song, and Wong (2009) analysed previous studies on competitiveness in the hotel industry and concluded that 'information technology such as the Internet, intranets, and central reservation systems, is one of the crucial investments that are made by hotels to improve their performance' (Tsai et al., 2009, p. 23).

While some hotels have progressively introduced new technologies on a massive scale, others lag far behind. This ICT divide is occurring both in geographical space and in time. In addition, different firms within the same sector, including big international hotel chains or small local family-owned hoteliers, position themselves on different sides of the digital divide. The decision regarding investment in such technologies often depends on the degree of their awareness of ICT, or on how the hotel owners and managers perceive ICT (European Commission [EC], 2003; Karadag, Cobanoglu, & Dickinson, 2009) and its potential to increase their competitiveness.

Although the role of ICT in hospitality has been researched, this research has not yet addressed the developments and transformations bestowed by advancement of web technologies. These have advanced from the first generation of Web 1.0 to higher generations of social and intelligent web technologies, which are vital to innovations that can improve the competitiveness of organisations (Berthon, Pitt, Plangger, & Shapiro, 2012; Garrigos-Simon, Lapiedra Alcami, & Barbera Ribera, 2012; Kaplan & Haenlein, 2010). These technologies increase their capability to create value through the

roles of a combination of players in the network. The aim of this research is to achieve an in-depth understanding of the new circumstances involved in the implementation of ICT that have emerged from these developments.

The phenomena of the Internet and its infrastructure implicate the potential to shift market dynamics from local into global level. Accordingly, the needs to investigate the Internet use as well as its integration in hospitality business models are inherent. From that perspective, this study examines the role of ICT in hotel firms.

First, it is argued that firms need to increase their awareness of the potential of ICT to increase their competitiveness and to start to integrate it into their strategy and practice. This process takes time. Second, although hotel firms are different in geographical location, size, and ownership, as well as in their initial attitude and perception of ICT performance, eventually they will all recognise the importance of ICT resources and put them on their lists of priorities to increase their competitiveness. This process might occur in time for each advanced level of ICT resource groups, as they develop over time. More specifically, if a hotel has already adopted the first-generation known as static Internet, the adoption of dynamic, second-generation Web 2.0 would require the same procedures and prompt the same reactions that have already been experienced during the implementation of the initial Internet technology.

Therefore, the purpose of this research is to survey the (changing) role of ICT in improving the competitiveness of a hotel firm, in general, and to consider the firm's behaviour regarding the developments and transformations that it has undergone while advancing from Web 1.0 to Web 2.0 technology.

2. Theoretical background

Within the literature there are different ICT terminologies and understandings. Orlikowski and Gash (1992, p. 2) implied that ICT is 'any form of computer-based information system', while Kudyba and Romesh (2002) alluded to ICT as a set of technology (hardware, software, and telecommunications) with the potential to create, save, acquire, transmit, analyse, and communicate data and information. In this study the broader perspective of ICT interpretation developed by Turban, Leidner, McLean, and Wetherbe (2008) is supported, in which ICT is understood to be set of ICT systems, ICT users, and ICT management. In the tourism context, Buhalis (2003) considered ICT to be the hardware and software, groupware, and netware, as well as the intellectual capacity (human ware) to develop, programme, and maintain related equipment. Hotels have adopted different kinds of the above-mentioned 'wares', such as computers, office applications, Internet, intranet, central reservation systems (CRS), satellite and mobile communications, interactive television, and self-service terminals in order to improve their operational efficiency and competitiveness.

Notably, the Internet has been recognised as being increasingly important for information dissemination, communication, and online purchasing, as well as being a distribution channel for hotel markets (Avcikurt, Altay, & Ilban, 2011; Buhalis & Law, 2008; Musante, Bojanic, & Zhang, 2009). As a part of their promotional mix, the Internet allows hotels to communicate directly with their different market segments and to adapt their services according to developments in the external world.

Internet-based technology and resources such as Web 1.0, Web 2.0 and Web 3.0 have evolved over time. According to Spivack (2013), Web 1.0 was the first generation of the Web.

During the Web 1.0 phase, between 1990 and 2000, the Web was beginning to be developed for commercial purposes. Web 1.0, recognised as static Internet or 'read-only web', allowed the Internet users to search for information and read it. Although user interaction and content contribution is low, Web 1.0 resource supports establishing an online presence and enabling information availability to anyone at any time. The findings indicate the link between its deployment and a firm's performance and competitiveness (Bai, Law, & Wen, 2008; Niininen, Buhalis, & March, 2007). In response to the increasing demand for online services, many hotels have established websites to promote their services and products, and to strengthen their relationship with customers (Law, Qi, & Buhalis, 2010; O'Connor & Frew, 2002; Šerić & Gil-Saura, 2012).

Furthermore, the next decade (2000–2010) belonged to Web 2.0 technologies, or a web generation called dynamic Web 2.0. Its application resulted in sociological effects caused by: (1) shift in locus of activity from the desktop to the Web; (2) shift in locus of value production from the firm to the consumer; and (3) shift in the locus of power away from the firm to the consumer (Berthon et al., 2012, p. 262). Transition from static Web 1.0 to dynamic Web 2.0 was supported by emergence of social media platforms such as blogs, social networking sites (e.g. Facebook), collaborative projects (e.g. Wikipedia) and/or content communities (e.g. YouTube), which enabled content creation and sharing information online (Tokar, 2009). Web 2.0 services engage customers (Sashi, 2012), and are changing the behaviour of travellers searching for information, and affecting subsequent decision-making (Leung, Lee, & Law, 2011). In time, social media have become essential mechanisms for travellers when they plan a trip or make a hotel reservation (Kwok, 2011). In response to new dynamics of consumer behaviour, many hotels have already integrated social media into their strategic plans, especially in the areas of sales/marketing and communication.

Our (ongoing) decade (2010–2020) belongs to Web 3.0, which can be called 'the intelligent Web' (Spivack, 2013). Web 3.0 technologies are based on semantic web, natural language search, data mining, machine learning and artificial intelligence.

In summary, when a new generation of web technology is being implemented and transferred into a CAR, constant innovations in ICT over a time period are followed by a time lag and by constant changes in a firm's behaviour. For example, the Slovenian hotel sector would not have known and employed a second-generation of web-based services when our first data-set was gathered in the year 2000, but surely these services had become relevant when our second data-set was collected in 2010.

3. Competitive advantage factors/resource model

However, Internet presence is not a guarantee for success and many businesses have failed to utilise their websites effectively (Kim, Yuan, Goh, & Antun, 2009) and transform them into a competitive advantage. According to the literature, there are three different views on competitive advantage: resource-based, generic strategy, and dynamic capabilities (Bilgihan, Okumus, Nusair, & Kwun, 2011). A resource-based view considers some resources of a firm as sources of competitive advantage (Hunt, 1995; Pena-Vinces, Cepeda-Carrion, & Chin, 2012). Resources may become a source of competitive advantage if they are valuable or rare, imitable, and not substitutable without great effort, and if the firm succeeds in offering a positive experience to its customers. This is because not all firms have similar resources; ICT is a clear example of this (Powell & Dent-Micallef, 1997). A generic strategy view (Porter, 1989) suggests cost leadership, differentiation (unique and specialised products), and focus (niche markets)

as sources of competitive advantage. The dynamic capabilities view combines the first two views and suggests that firms must be dynamic, fast, and efficient in response to the developments and changes in the market place. This is a recognised 'must' for firms to stay competitive in the market. This study uses a view of dynamic capabilities to test the role of ICT as a CAF among other recognised CAFs: contacts, image, differentiation, quality, and price (Figure 1).

Figure 1 presents the CAR model as developed for the Slovenian economy by a group of researchers from the Faculty of Economics at the University of Ljubljana (Mihalič & Dmitrović, 2000; Prašnikar, 2000). The model is based on a resource-view, because the firm can offer unique and specialised ICT-supported services. Then, a generic strategy view is supported by the interactions in the model, where ICT can enhance the potential for differentiation in the level of competitiveness. This, in turn, can increase the firm's productivity and competitiveness by improving its contacts or image. In summary, these two views support the dynamic capabilities view, because – according to the previous discussion – ICT can improve market position and competitiveness when firms use its capabilities to respond to the rapidly changing market place.

According to this model, improving CAF contacts means increasing the use of CARs, such as quality of presale services, local image, and personal contacts (see Figure 1). CAF image consists of the CARs: brand, corporate image, physical evidence, and design and high market share. For example, service designs (Miettinen, 2011) that use the latest technology may contribute additionally to the hotel's image and brand. Furthermore, high market share may reflect its good image and position in the market.

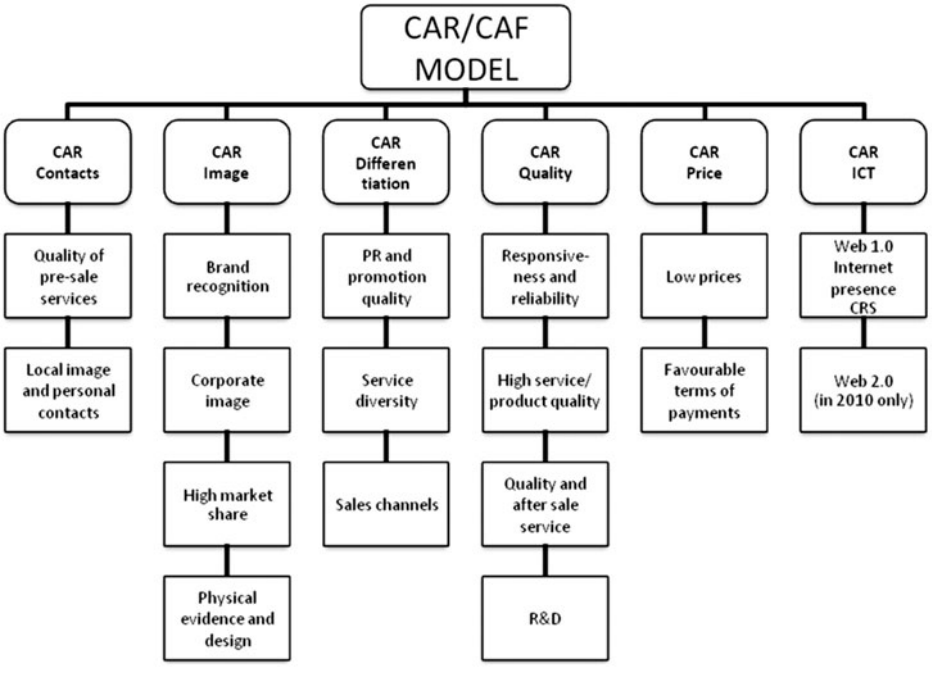

Figure 1. CAR/CAF model.
Source: Adapted with permission from Mihalič and Dmitrović (2000).

CAF differentiation assumes that hotels can differentiate their offer, based on service-diversity with their competitors, differentiated promotion, and the use of specific sales channels. In this context, the Internet can be a source of differentiation (Buhalis, 2003; Yelkur & DaCosta, 2001).

Furthermore, this model relates product quality to specific resources, such as responsiveness and reliability, high service quality, quality of after-sales service, and research and development resources. Technology, such as the Internet, helps firms to manage product quality. Additionally, ICT enables them to standardise their processes and products. According to Sengupta and Bansal (2012), the use of ICT improves quality and, consequently, the generation of revenue.

With regard to price, scholars and practitioners recognise ICT as a resource with the potential to determine the price by assessing real-time demand and available supply. Many studies have confirmed that lower price is one of the key motivating factors that encourage consumers to purchase travel online (IBM Institute for Business Value, 2011; PhoCusWright, 2001). In our model, the CAF price was studied from the point of two CARs: low prices and favourable payment conditions.

In general, ICT, as a resource, has the capability to improve all of the stated CAFs to a greater or lesser extent. Thus, Web 1.0, the CRSs, Internet and Web 2.0 technology can change the image and quality, and can also impact the differentiation in how contacts are used and improved to benefit a firm. Before are explored these connections using a real case data from the Slovenian hospitality sector, some information on this sector and on ICT-use in this sector are presented in the next section.

4. The Slovenian hotel sector and ICT

Slovenian tourism is quite diversified, and includes mountain tourism (skiing and other outdoor recreation and trekking), sun and beach and spa tourism, city and cultural tourism, farm tourism, and gambling. The country receives about 2.7 million visitors per year and nine million overnight stays, with more than 60% of the tourists coming from outside Slovenia (Statistical Office of the Republic of Slovenia [SORS], 2012). Accommodation capacities are divided among different types of destinations: the majority are in mountain destinations (28%) and sea resorts (26%), followed by spa resorts (21%). The accommodation sector in the capital Ljubljana then accounts for around 10% of all hotel capacity in the country, other accommodation capacities 13%.

With regard to the ICT infrastructure, Slovenia is a medium-developed country, and according to the data on competitiveness in Travel and Tourism of the World Economic Forum (WEF, 2011), of 139 countries Slovenia ranks 36th in the extent of Internet usage for business, 30th in the number of Internet users, and 56th in mobile telephone subscribers.

In the hotel business, around 60% of room bookings are booked online (Statistical Office of the Republic of Slovenia [SORS], 2009). However, Internet payment is underdeveloped and only 7% of tourists book online, representing almost half of the average in European Union (EU) countries (European Commission [EC], 2011). This means that tourists are using e-mail contacts, online intermediaries, or call centres, which are all accessible through Internet pages. However, the CRSs are not fully used, because there is still a hesitation to execute online payments. Furthermore, according to SORS (2009) data, only 22% of Slovenian visitors have used the Internet as their main source of information. According to the European Commission (EC, 2011), 56% of German travellers, 63% of UK travellers, 48% of Italian travellers, and 38% of Croatian

travellers – all representing the main market segments of Slovenia – use the Internet as a source of tourism information.

Although the majority of hotel companies use Web 2.0 in their day-to-day business practice, their managers find these tools are used inefficiently (Dwyer, Knežević-Cvelbar, Edwards, & Mihalič, 2012).

5. An ICT survey in the Slovenian hotel sector

5.1. Data

In 2000, hotel managers in all 124 Slovenian hotel firms that existed at the time were asked to assess the importance of specified sources of competitive advantage regarding their company on a five-point Likert scale: (1 = not important and 5 = very important). The response-rate and population coverage was 26%. In 2010, the same questionnaires were sent to the 160 existing hotel firms. The response rate and population coverage was 57%. The questionnaires were answered by hotel directors, and marketing or reception managers.

5.2. Method and hypotheses

As a research instrument, is used one part of the complex questionnaire on CARs, which has been used for Slovenian economy (Prašnikar, 2000). The original questionnaire listed 13 CARs, but not the ICT resources. Following the increasing awareness in research and business of the potential of ICT to increase the competitiveness of the hospitality industry, two additional statements on Internet-use and CRS, regarded as important resources at that time, were added to the list before the instrument was sent to hotel managers in 2000. Ten years later, following recent developments in ICT-use in the hotel industry, another ICT-competitiveness resource was added to the list – the use of Web 2.0 – before the questionnaires were sent to the hotel companies in 2010.

Three different sets of hypotheses were tested at the factor and resource level, referring to different research aspects.

1. The first set of hypotheses considers the increasing relative importance of ICT competitive resources. As ICT is a relatively new competitiveness factor and represents a new way of doing business, hotel firms need to build awareness about the potential of ICT and refocus their attention away from other known competitiveness-resources toward this new one. This process takes time. Thus, it is argued that *at the early stage of ICT penetration, other (older) factors are more important than the newer ICT factor or its resources* (**Hypothesis H1a**) and that *over time, the importance of ICT, when compared with other factors, increases* (**Hypothesis H1b**).
2. The second research aspect addresses the heterogeneity of the hotel industry's perception of ICT and convergence. This heterogeneity is derived from the heterogeneity of the hotel sector itself, being different in geographical location, size, ownership, quality, and other factors. Some firms might see ICT and its resources as important and implement them; others might not. Thus, it is claimed that *the perception of ICT as a new source of competitiveness varies among hotel firms* (**Hypothesis H2a**). However, *over time, more firms will recognise the importance of ICT resources and put them on their lists of competitiveness-resources* (**Hypothesis H2b**).

3. The last research aspect refers to ICT as supporter of other competitive advantage factors. As already discussed in the literature and in this study, ICT's role in competiveness has been seen, among others, as an indirect supporter of other competitiveness-factors, such as quality, image, price, contacts, and differentiation. For this reason, it is claimed that *ICT strongly correlates with other competitiveness-factors* (**Hypothesis H3a**) and that *these correlations change over time* (**Hypothesis H3b**).

The above hypotheses have been studied from the standpoint of the first and second generations of web resources. In this article descriptive statistics, using methods for testing the hypotheses, correlation matrix, and clustering analysis on the data sets from 2000 and 2010 are discussed.

5.3. Research results

5.3.1. The increasing relative importance of ICT competitiveness resources

The results show that in 2000, Slovenian hotel managers perceived ICT Web 1.0 as the least important CAF (Figure 2). It was ranked sixth out of the six competitiveness-factors, and its importance was graded as 3.23 on the 5-point Likert scale. Ten years later, the perception of the potential of first generation ICT to increase competitiveness changed substantially. Web 1.0 has improved its standing by two points and is ranked fourth out of six, leaving the factors contacts and price behind, and scoring 4.06 on a 5-point scale. All differences were statistically significant (Table 1) and support our first set of hypotheses on the increasing importance of ICT at the factor level.

Further, the hypotheses are also generally supported at the resource level. However, as the studied ICT resources were at different stages of being a new resource at the time of our research, there were some differences regarding the achieved awareness and importance level of these resources. By 2010, the older resource (first-generation Internet) slowly but surely became an important business practice, as indicated by its high value (4.74) and its reduced standard deviation (Table 1). The importance of the slightly younger and more complex competitive ICT resource, CRS, also increased, but still

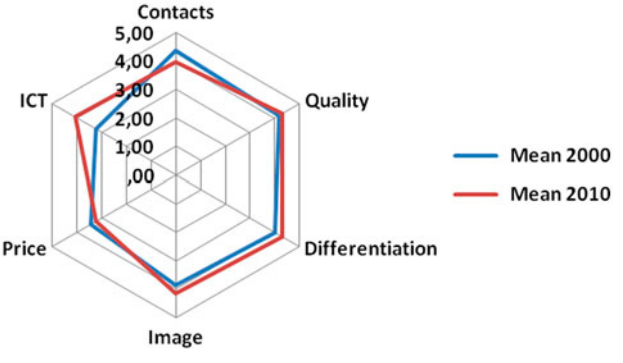

Figure 2. Scatter diagrams for CAFs in the Slovenian hotel sector for the years 2000 and 2010. Source: Research results.

Table 1. Descriptive statistics for ICT competitiveness resources in the Slovenian hotel sector for the years 2000 and 2010.

	2000		2010			
Resources factor	Mean	Std Dev.	Mean	Std Dev.	F-test	Sig.
Internet presence	3.50	.974	4.74	0.508	82.644	0.000
CRS	2.97	.999	3.75	0.934	14.727	0.000
Web 2.0	–	–	3.71	0.995	–	
ICT (Internet, CRS)	3.23	.848	4.24	0.578	54.568	0.000
ICT (Internet, CRS, Web 2.0)	–	–	4.04	0.614	33.438	0.000

Source: Research results.

represented less potential for competitiveness for the Slovenian managers, when compared with Internet use (value 3.75). The newest ICT resource that came into use in the hotel sector after 2000, Web 2.0 (value 3.71), slowly came to the attention of Slovenian hotel business persons, obviously attracting a similar level of attention as the Internet had itself some years earlier. The statistical results (Table 1) support the hypothesis on the stepwise, increasing penetration of ICT resources on the firms' lists of important factors of competitiveness, also at the resource level.

5.3.2. The heterogeneity of the hotel industry's perception of ICT and convergence

The question of heterogeneity in the perception of the importance of ICT among different hotel firms has been studied by two-cluster analysis. In 2000, one group of hotel firms (cluster 1 – representing 13% of the total) perceived CRS as an unimportant competitiveness factor (mean 1.5), while another group (cluster 2 – representing 87% of the total) saw some medium competitiveness potential (mean value 3.19). This result is still considerably below the value that one would expect at that time, considering the higher use of first-generation web in other hotel sectors abroad. These differences in the perception of Web 1.0 were statistically significant (Table 2); thus, the hypothesis (H2a) on industry heterogeneity is supported at the factor level, ICT. However, the same cannot be claimed at the resource level for Internet importance, where all Slovenian managers

Table 2. Mean values by clusters for the Slovenian hotel sector and ANOVA for the years 2000 and 2010.

		Mean					
	ICT Competitivnes resource/factor	Cluster 1	Cluster 2	Difference (absolute)	F-test	df	Sig (2-tailed)
Year 2000	Sample share in %	87	13				
	Internet 2000	3.58	3.00	0.58	1.226	0.278	0.278
	CRS 2000	3.19	1.50	1.69	14.601	0.001	0.001
	ICT 2000	3.39	2.25	1.14	7.618	0.010	0.000
Year 2010	Sample share in %	54	46				
	Internet 2010	4.68	4.78	0.10	.833	0.364	0.364
	CRS 2010	3.50	3.89	0.39	3.360	0.071	0.071
	Web 2.0 2010	3.27	4.03	0.76	15.132	0.000	0.000
	ICT 2010	3.82	4.23	0.41	10.633	0.002	0.000

Source: Research results.

considered Internet as of medium potential (values 3 and 3.58). This is not surprising, because Internet is the older resource among the ICT resources, and it is assumed that, at the time, it was already a part of the firms' awareness.

In 2010, all of the importance values increased for the factor, ICT. As statistical analysis (Table 2, F test) did not confirm significant differences among the two hotel groups, it cannot be assumed that they perceived CRS and Internet in 2010 differently. But, over the 10 years, CRS has become older and a more known competitive resource among all the firms, reaching a similar position to that of Internet in 2000. Yet, the two groups had different perceptions of the newest resource. In 2010, Web 2.0 was seen as a more important opportunity for competitiveness by 46% of Slovenian hotel firms (mean value 4.03), compared with other hotel firms that saw it as less important (mean 3.27).

A comparison of the 2010 and the 2000 data shows that perception of the importance of ICT among the different groups is getting closer, demonstrating that over time, more hotel firms recognise the importance of ICT resources and put them on their CARs lists, as claimed by the hypothesis (H2b).

Further, tests using paired samples indicated that the oldest resource, Internet, is the most important resource, when compared with CRS and Web 2.0 (Table 3). The business role of the first-generation Internet is obviously seen as dominant in the ICT factor group. However, the analysis did not confirm the importance difference between CRS and Web 2.0 due to a non-converged and immature attitude toward the newest dynamic Web 2.0.

5.3.3. ICT as supporter of other competitive advantage factors

To test the third set of hypotheses, cluster analysis and bivariate correlations matrix were applied. The dendrograms (Figure 3) illustrate the hierarchical relationships by showing the connections between the studied CAFs and CARs.

The first dendrogram on CAFs indicates different distances to the left side of the diagram, and thus different clustered relationships between the CAFs. It also demonstrates that the competitiveness-importance of ICT and image tend to vary rather little,

Table 3. Paired samples test for competitiveness resource pairs in the Slovenian hotel sector for the years 2000 and 2010.

Competitive resource pairs			Paired Differences					
			Mean	Std Deviation	Std.Error Mean	T	df	Sig. (2-tailed)
Year 2000	Pair 1	Internet 2000 – CRS 2000	.533	1.008	.184	2.898	29	.007
Year 2010	Pair 2	Internet 2010 – CRS 2010	.989	.962	.099	10.025	94	.000
	Pair 3	Internet 2010 – Web 2.0 2010	1.022	.978	.101	10.075	92	.000
	Pair 4	CRS 2010 – Web 2.0 2010	.043	1.062	.110	.390	92	.697

Source: Research results.

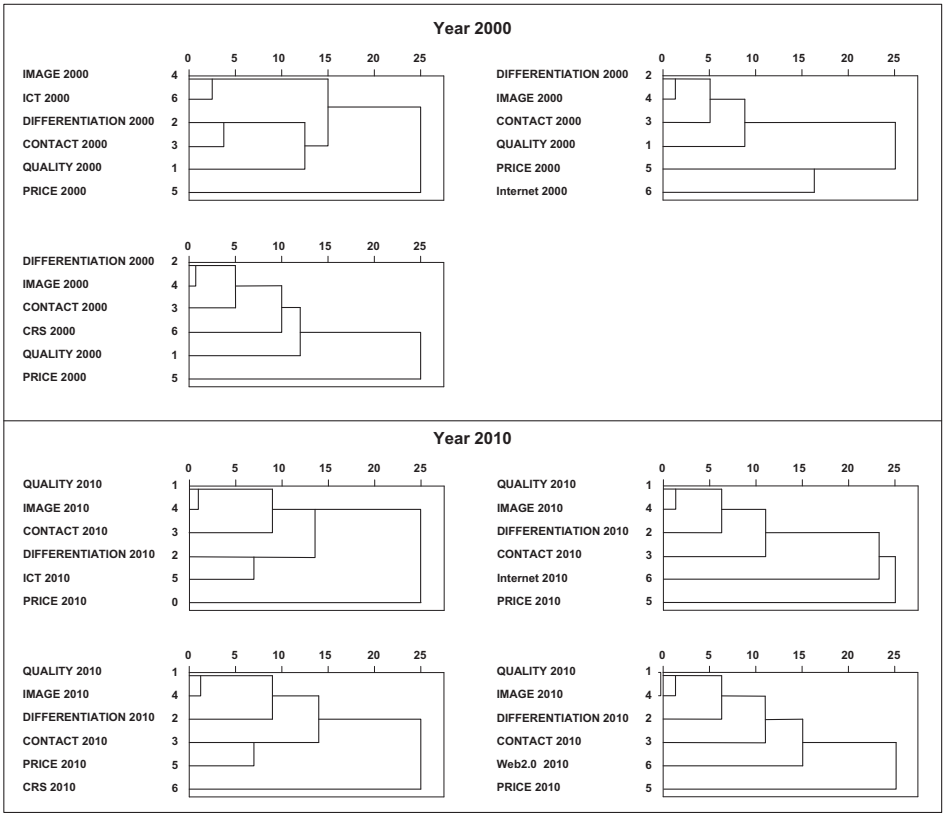

Figure 3. Dendrograms using Ward Linkage and Rescaled Difference Cluster Combined for the years 2000 and 2010.
Source: Research results.

because the ICT-image connection line is very close to the left side of the diagram. In 2000, the ICT factor was closely associated with CAF image, the CAF contact was closely associated with CAF differentiation. Other CAFs are less connected than previous ones, while the CAF price is the most distant from the left side of the diagram and thus the least connected to other CAFs. This is in line with business orientation, which has witnessed strategic orientation toward low prices as inappropriate for a small Slovenian hotel sector. However, all the listed connections are strong and statistically significant, as supported by the correlation coefficients and their significance value (0.00) in Table 4. This affirms the hypothesis that ICT supports other CAFs, and in 2000, the strongest relationship was between ICT and image. This is also the case at the resource level of Internet and CRS.

The results for 2010 show different connections. ICT clusters the most with differentiation, then with contacts, image and quality, and, the least with price. Furthermore, all bivariate connections between factors are statistically significant (Table 4). At the CAR level, it can be observed that this resource supports price (correlation 0.46), and that Internet presence and Web 2.0 also show low connection to other factors of competitiveness. Generally, it is obvious that each CAF, to a lesser or greater extent, is related to the other, and only price is always far to the left side of the diagram.

Table 4. Bi-variate correlations for the years 2000 and 2010.

Competitive advantage factor (corresponding year)		Internet 2000	CRS 2000	ICT 2000 (2+3)	Internet 2010	CRS 2010	Web 2.0 2010	Internet 2010 and CRS 2010 (5+6)	ICT 2010 (5+6+7)
1		2	3	4	5	6	7	8	9
QUALITY	Pearson Corr.	.414*	.222	.371*	.474**	.265*	.496**	.530**	.530**
	Sig. (2-tailed)	.023	.238	.043	.000	.011	.000	.000	.000
	N	30	30	30	91	91	91	89	89
DIFFERENTIATION	Pearson Corr.	.507**	.281	.460*	.391**	.374**	.481**	.532**	.532**
	Sig. (2-tailed)	.004	.133	.011	.000	.000	.000	.000	.000
	N	30	30	30	95	95	95	93	93
CONTACTS	Pearson Corr.	.422*	.237	.385*	.202	.174	.241*	.365**	.365**
	Sig. (2-tailed)	.020	.207	.039	.053	.097	.021	.000	.000
	N	30	30	30	92	92	92	91	91
IMAGE	Pearson Corr.	.690**	.537**	.714**	.359**	.272**	.412**	.498**	.498**
	Sig. (2-tailed)	.000	.002	.000	.001	.010	.000	.000	.000
	N	30	30	30	90	90	90	89	89
PRICE	Pearson Corr.	.468**	.263	.427*	.361**	.078	.327**	.366**	.366**
	Sig. (2-tailed)	.009	.160	.019	.000	.464	.002	.000	.000
	N	30	30	30	90	90	90	88	88

Source: Research results.

The results support the last set of hypotheses that ICT supported different factors of competitive advantage during the period 2000–2010. With increasing awareness and penetration of ICT resources, its potential to support other factors of competitiveness is changing. It has transformed from being mostly the image resource in 2000 to being more strongly correlated to the factors of differentiation and quality in 2010. This may also indicate that ICT is becoming an important part of the product's differentiation and quality, and this is an important factor in a hotel firm's business and competitiveness.

5.4. Study limitations

The study also have limitations that need attention. First, the analysis was based on managers' opinions on the importance of listed competitive-advantage resources for their firms. It was assumed that if the manager gave the highest grade (very important) to service ICT, his firm tries to take advantage of increased deployment of ICT. Concurrently, a high score on ICT importance does not necessarily mean that a firm has actually achieved ICT-based competitive advantage in the market. Furthermore, if the managers gave a low grade (not important) to, CRS for example, it does not mean that the source is not important in the tourism business in general; it signifies that it is not important to and therefore not employed by a particular firm.

Second, the study has used CAF model, which was developed for the Slovenian economy and tourism sector in 2000. To compare the results for 2000 and 2010, the same tourism CAF model was used in 2010. However, to follow the newer development in the ICT field, a 2010 survey added a new ICT resource, Web 2.0, which was not recognised as a potential CAR in 2000, and thus not a part of the first model. It is assumed that such an extension of the model is justified as it enables the study of the dynamic of a firm's response to changes in the market place, referring to new emerging resources to improve their competitiveness.

6. Discussion and research implications

The study of Slovenian hotel sector in 2000 recognised that, at that time, the use of the available first generation of ICT was at a relatively low level, when compared with ICT hospitality business practice in other European countries and the US. However, 2010 data showed that this ICT/Web 1.0 digital divide has been reduced. The 2010 survey revealed that Slovenian hotel managers have slowly accepted the dialogue of ICT/competitive advantage. It can be seen that the resources, Internet presence, CRS, and Web 2.0 are slowly becoming more important on their CAR lists. Internet presence is revealed as being more important in 2010 than in 2000. From one point of view, this is encouraging, while on the other hand, if everyone uses the Internet, its competitiveness-potential comes down (Carr, 2004) and thus a decreasing importance of old ICT resources would also be expected. However, there are new second-generation web technologies that are not yet employed by everybody, such as Web 2.0, which has attracted a similar level of attention in the hospitality business as Internet, itself, more than 10 years ago. From the perspective of competitiveness, a new resource can be a new 'competitiveness source', as indicated by the increasing importance of Web 2.0. In the meantime, Internet, as an old web resource, still affects distribution, pricing, and customer communications, and has probably already become a part of the everyday business.

The recommendation to the managers is that new ICT resources can certainly not be ignored, and that the digital divide needs to be closed as soon as possible, irrespective

of the extent of competitiveness-advantage achieved. In addition, it is claimed that for the hospitality managers, the evolution of ICT is a given fact, and every new ICT CAR needs to undergo various stages of the technological lifecycle (Beldona & Cobanoglu, 2007) on its way to a position of increasing importance on the firm's CAR list.

These research results indicate that, over time, the importance of new ICT resources on any hotel's list increases. However, the importance does not increase at the same pace in all hotel firms. Hotels are different in geographical location, size, type of ownership, and market position, ranging from monopoly to full competition. The results showed that these factors, which might influence ICT implementation and its acceptance at the beginning, become less relevant over time, since the new ICT resource is put on the firms' CAR list. The shift toward Web 2.0 is stimulated by the fact that more hoteliers understand the importance of the social media and Web 2.0 for contemporary hotel management.

On testing the third set of hypotheses, it is revealed that ICT strongly correlates with different CAFs and that this correlation changes over time, to the benefit of CAFs, by providing higher added value, such as differentiation and quality. At the early stage of Internet implementation, the latter was seen as an image issue. Thus, it is argued that changing image only by using a new technology, even for the better, might be a risky business, if the quality and market appropriateness of services is not equally developed, and equally supported by the new technologies. Keeping this in mind, it should be noted that investment in ICT will not show results immediately, but as time goes by, the acceptance of ICT and its integration into the business process will grow as well. In this sense, the combination of technologies and the orientation towards differentiation and quality becomes a competitive advantage when firms utilise the technologies as marketing tools.

The perception of ICT has been shifted from a hotel's overhead to a strategic resource capable of altering competitive advantages. This transformation requires hotel managers to become more ICT aware, to follow the developments in ICT and to implement it into their business practices. By using technology more, its users become more familiar with it and better prepared for taking full advantages of all opportunities that technology may offer.

Instead a new generation, Web 3.0, has already been developed. The highly intelligent personal agents of Web 4.0 (Spivack, 2013) are expected to be able to further assist in competitiveness after 2020. These represent a challenge for future research on the potential of ICT to increase competitiveness in the hotel sector.

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