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INNOVATION ACTIVITY IN THE HOTEL SECTOR – THE CASE OF CROATIA

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Keywords: *innovation, hotels, Croatia, empirical research*
JEL: 031

Abstract

Innovation is, alongside, skills, investment, enterprise and competition, a major driver of productivity in economy. In tourism also, it is believed that the competitiveness of enterprises to a great extent depends upon their innovation activity. Surprisingly, in tourism the research on innovation has so far received poor attention from scholars, especially in empirical research. This article aims at filling that gap. It will present results from an empirical study of innovation activity carried out during the spring/summer 2010 in the hotel sector in Croatia. Due to the problem of empirical measurement of innovation and the specific characteristics of hotel sector, the CIS IV[1] *questionnaire design was used and adapted for this purpose. CIS questionnaire has been criticized by scholars for its deficiencies in measuring innovation in services. Still, after an extensive literature and research review, it has been concluded that with the adaptations made, it is the best available tool for this purpose. The research*

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preliminary results suggest that Croatian hotels can be portrayed as only moderately innovative and with different innovation activity according to innovation type and newness. Furthermore, parallels, where possible, are drawn to other similar research carried out in other countries (Spain and Austria) as to be able to benchmark the innovation activity of Croatian hotels. Based upon the empirical results, recommendations and guidelines for hotel practice as well as for activities of regulatory bodies are given.

1 INNOVATION – CONCEPT AND IMPORTANCE

According to DTI[2] "Innovation is one of the five drivers of productivity growth alongside skills, investment, enterprise and competition" (DTI, 2007, p. iii.). Its importance was first recognized by late Schumpeter in last century. For his pioneer and influential work he is often called the father of innovation studies. Although there is no doubt about the importance of innovation, its definition is not clearly understandable nor generally accepted upon (Table 1). Schumpeter (1961) defines innovation broadly in following manner "To produce means to combine material and forces within our reach. To produce other things or the same thing by a different method means to combine these materials and forces differently" (Schumpeter 1961, p. 65). According to Kanter (1995) "Innovation refers to the process of bringing any new, problem solving idea into use. Ideas for reorganizing, cutting costs, putting in new budgetary systems, improving communication or assembling products in teams are also innovations" (as cited in Hall & Williams, 2008, p. 5).

There is, however, agreement that innovation is inseparably connected to newness. This agreement, on the other hand, brings forth another problem – since clearly not everything that is new can be classified as innovation which newness *is* innovation? According to Schumpeter, such new combinations could result in innovations consisting of:

[2] DTI = Department of Trade and Industry, UK.

1. the introduction of a new good or of a new quality of a good;
2. the introduction of a new method of production;
3. the opening of a new market;
4. the conquest of a new source of raw material or half manufactured goods or
5. carrying out of a new organisation of an industry, such as the creation of a monopoly position or the breaking up of a monopoly position (Schumpeter 1961: 66).

This typology has dominated the literature for a long time. Today, however, most authors (Avermaete et. al., 2003; Sundbo and Gallouj, 1998) distinguish between four kinds/areas of innovation: product/service, process, marketing and organizational innovation and that is the typology applied in CIS survey.

TABLE 1: Different definitions of innovation

Definition	Author/s
"Innovation is the successful exploitation of new ideas."	Innovation Unit, DTI, (2004), as cited in Tidd and Bessant (2009)
"…the search for, and the discovery, experimentation, development, imitation, and adoption of new products, new production processes and organizational set-ups"	Dosi (1988), as cited in Sørensen (2004)
Industrial innovation includes technical, design, manufacturing, management and commercial activities involved in the marketing of new (and improved) product or the first commercial use of a new (or improved) process or equipment	Freeman (1992)
"…a process of creating new value---geared first towards customers, as the main arbiters of business competitiveness, but one that can also involve other stakeholders as major beneficiaries, such as the organization itself (employees), shareholders (profitability), external partners, etc."	Flipo (2001), as cited in Decelle (2004)
"…an ongoing process of leaving, searching and exploring which results in (1) new products, (2) new techniques, (3) new forms of organization and (4) new markets."	Lundvall (1992), as cited in Avermaete et al. (2003)
"Innovation is the generation, acceptance and implementation of new ideas, processes, products or services. Acceptance and implementation is central to this definition; it involves the capacity to change and adapt."	Kanter (1995), as cited in Hall & Williams (2008)

Source: authors' compilation.

[1] CIS = Community Innovation Survey.

Furthermore, as Johanessen et al. (2001) point out, in order to provide a useable definition of innovation, three questions need to be answered: what is new, how new and new to whom? In this article, we follow the CIS approach and answer these questions as follows:

1. what is new? - product/service, process, marketing or organizational method;
2. how new? - completely new or significantly improved;
3. new to whom? - new to the firm observed.

Additionally, we add one more question/criteria and that is the character of the newness – whether it is technological or non-technological in nature. In our research, we include both forms of innovation.

2 INNOVATION IN TOURISM – LITERATURE REVIEW

In a recent review of research on innovation in tourism Hjalager (2010) states that through its history tourism has been marked by extraordinary innovation while at the same time the issue of tourism innovation was rarely discussed in the context of traditional academic research on innovation. Hjalager herself was a pioneer in researching these issues. In an article on tourism, environment and innovation she pointed out that such approach represented "an explorative and analytic approach which tourism research has never before touched on in any systematic way" (Hjalager, 1996, 201 according to Hall and Williams, 2008, 4). On the other hand, almost 15 years later, she reasonably concludes "... there is still only limited systematic and comparable empirical evidence of the level of innovative activities and their impacts and wider implications for destinations and national economies" (Hjalager, 2010, 1).
Several factors have led to this situation. Firstly, tourism is a young research area in which only in early 70-ies of last century a significant involvement of

academic research begins (Salah, 1992, according to Sørensen, 2004). Today, it is still often called out as insufficiently strong and appreciated academic area (Weaver and Opperman, 2000). In addition, research on innovation in services is also relatively young. Furthermore, a significant obstacle is the problem of defining the "tourism industry" and its distinction from other sectors (Leiper, 1990; Smith, 1988, 1993). In fact, tourism is not an industry/sector which can be found in standard industrial classifications. That is one of the main reasons why most research on this subject is based on case studies or selected samples of companies, as opposed to large national surveys such as CIS (Hall, 2009). Finally, a significant problem of tourism innovation research and its empirical measurement is the problem of tourism product definition (Smith, 1994) and the inappropriateness of standard innovation indicators (such as the number of patents, investments in research and development).

However, in recent years, innovation emerges as an increasingly important issue in discussions on tourism policy and development. The reason is its wide recognition as a possible mode for increasing the competitiveness of products, businesses and destinations (Hall and Williams, 2008; Hall, 2009). A significant impetus to the scientific search for sources, catalysts and barriers of innovative behaviour in the tourism industry comes from the industry itself. It originated from destinations in which mass tourism destination life cycle reached its peak (Poon, 1993) and which "cried out" for new concepts of regeneration, higher quality and added value like, for example, European alpine destinations (Pikkemaat and Waiermair, 2007). In fact, traditional tourist countries faced with problems of decreased productivity and growth increasingly see innovation as a solution to their development problems (Keller, 2005, as cited in Pechlaner, 2005). Another reason is the more and more intense competition in tourism. In such market conditions, there is a general consensus that competitiveness of tourism enterprises increasingly depends upon their innovation activity bringing about lower costs and/or higher quality output (Ottenbacher and Gnoth, 2005, Chadee and Mattsson, 1996; Mattsson and Orfila-Sintes, 2009). Most frequent areas of innovation are improved and individualized products and services, environmental protection and information and communication technology

usage.

As a result of the aforementioned circumstances, in recent years the literature on innovation in tourism is growing. Today it constitutes a body of a considerable number of valuable and noteworthy contributions with academic, governmental and regulatory origin (Hjalager, 1997, 1998, 2002, 2009, Jacob et al. , 2003; Nordin, 2003; OECD, 2003; Sørensen, 2004; Volo, 2004, 2005; Frechse, 2005, Pikkemaat and Peters, 2005; Pechlaner et al., 2005; Ottenbacher et al., 2005; Weiermair, 2005; Mattsson et al., 2005, Orfila-Sintes et al., 2005; Walder et al. (Eds.), 2006; Orfila-Sintes and Mattsson, 2007, Ottenbacher and Gnoth, 2005, Novelli et al. 2006; Sundbo et al. 2007; Pikkematt and Weiermar, 2007; Hall and Williams, 2008; Hjalager et al, 2008; Pikkemaat, 2008; Hall, 2009, Mattsson and Orfila-Sintes, 2009; Hjalager, 2010).

The growth of interest in this issue is particularly evident in recent years. For example, in March 2009 INNOTOUR[2] lists 44 academic sources on the topic of innovation in tourism while in July 2010 that number rises to 101. Although a detailed examination of these articles reveals that not all are directly related to innovation in tourism, a significant number is showing an evident increase in research interest. However, a remark given by Hjalager (2010, p. 1) that "innovation has become a buzzword which in many cases is used without deeper reflection for anything that is moderately novel" points out to a needed caution and academic rigour in discussion and research on this complex and important issue.

Previous studies have shown that the degree of innovation in tourism is lower than in other industries (Volo, 2004) and that companies operating in tourism are in most cases only moderately innovative (Hjalager, 2002). This view partially originates from the structure of the tourism industry. Namely, it is an

[2]INNOTOUR is a WEB 2.O. platform for education, research and business development devoted to innovation in tourism. It operates as an experimental meeting and contact point for researchers, students and firms. It was initiated in 2009 and its content is created by its users. The platform is created and sustained by the Centre for tourism, innovation and culture, The University of South Denmark, and it is financed by the University of South Denmark, EU and Danish Ministry of Science, technology and innovation. One of the founders and project CEO is Anne-Mette Hjalager.

industry dominated by small and medium sized businesses while large enterprises are generally considered to be more innovative (Hjalager, 2002). This premise dates back to Schumpeter (1947) and as such is taken for granted in tourism. Some studies have shown that small businesses in tourism are even less innovative than small firms in other industries/sectors (Sundbo, 1998; Jensen, 2001, as cited in Matsson et al, 2005). On the other hand, some studies have identified highly innovative small enterprises within the tourism (Ateljevic and Doorne, 2000) and thus questioned the validity of these relations in tourism.

The existing research has revealed different degree of innovation among countries. Thus, Danish tourism firms (Jensen et al, 2002, as cited in Sundbo et al., 2007) and enterprises in British seaside resorts (Shaw and Williams, 1998) are characterized as "non-innovative" while in Spain (Fayos-Sola and Bueno, 2001; Perez and Llaudles, 2001, as cited in Sundbo et al., 2007) examples of destinations that have improved and diversified their products and thus can be considered innovative are found. However, Sundbo et al (2007, p. 88) conclude that "which firms are innovative and which are not is not known, nor is the explanation for these differences".

Summary of these findings is that tourism companies are generally speaking moderately innovative with some exceptions that indicate that there is potential for greater innovation in this important sector of global economy. Furthermore, Hall (2010) argues that the existing research is "fragmented" and there is an obvious need for a better quantification and comparability of data. Hall (2010) also warns that the issue of innovation policy is of particular importance. Specifically, little research has been devoted to the position of tourism in national innovation policies and the relationship between tourism and innovation policy (Hall & Williams, 2008; Scheidegger, 2006 cited by Hall, 2009).

The list of empirical papers/research on innovation in tourism is not very extensive and is significantly shorter than the list of research on innovation in other sectors[3]. Innovation in tourism was mostly researched in a "case by case"

[3] Pikkemaat (2005), building upon the analysis made by Bolda et al. (2004), observes that in the period from 1993-2003 in 11 distinguished scientific journals 68 articles on the subject of innovation were published. Thereof, 55% articles deal with innovation in industry, 37% with innovation in services while 8% (6 articles) focus on innovation in tourism.

manner (Hjalager, 2010). Therefore, Hall and Williams (2008) and Hall (2009) conclude that there is an obvious need for better empirical evidence on innovation in tourism and that its quantification is an essential need. One of the ways is to include the tourism "industry" in an adequate way in the existing research, such as CIS (Jacob et al., 2003). Alternatively, the development of tourism specific methodologies is an option. For example, an Austrian research team is currently working on a comprehensive model allowing investigation of innovativeness at enterprise and destination level (Pikkemaat and Walder, 2006, as cited in Hjalager, 2010). Besides quantitative data, qualitative research is also necessary in order to take into account the local and regional specifics. Hjalager (2010) highlights the importance of case studies that give an insight and explanatory value that cannot be produced with quantitative data alone.
Analysis and research of innovation in tourism can be based upon partial or integral tourism product[4]. If the latter aspect is chosen, it must be taken into account that tourism is a highly diversified economic activity comprised of businesses highly different in terms of innovative activity. Also, within individual sub-sectors significant differences exist because driving forces of innovation are time and space specific. Therefore, the empirical research on innovation has to begin by defining the specific tourism industry segment and the tourism area being researched. The research subject of this article is the innovation of partial tourism product – the hotel sector, and the area is the Republic of Croatia. Hotel sector is chosen because hotels are the basic tourism receptive units and one of the most important segments of the tourism offer. As such, they are often taken as a basic indicator of its development. Specifics of the hotel industry compared to the rest of the tourism sector are its relative homogeneity and the fact that different levels of hotel quality do not have a significant impact on hotel operations (Orfila Sintes et al, 2005). Specifically, what differentiates hotels with high and low category is the quality and range of additional services and tangible elements of service encounter.

[4]Partial tourism product refers to the product of a single tourism firm (accommodation, tours, amusement) while the integral tourism product refers to the tourism product of a given area i.e. tourism destination and is composed of aforementioned partial tourism products

Articles and empirical studies that have focused on measuring innovation at the destination level also give an insight into the innovation activities of hotels as a part of the destination offer. Such studies have shown that hotels are the most innovative segment of the tourism offer (Jacob et al, 2003; Sundbo et al, 2007; Pikkematt and Weiermar, 2007; Pikkemaat, 2008). Additionally, they have shown the dominance of technological innovation the hotel industry (Orfila-Sintes et al, 2005) and the positive effect of innovation on hotel image, profitability and customer satisfaction (Jacob et al, 2003).

On the other hand, there is a limited number of articles focusing on innovations in the hotel sector (Agarwal et al., 2003; Frehse, 2005, Ottenbacher and Gnoth, 2005, Orfila-Sintes et al., 2005; Pikkemaat and Peters, 2005; Orfila-Sintes and Mattsson, 2007; Groizard and Jacob, 2007; Pikkemaat, 2008, Martinez-Ros and Orfila-Sintes, 2009; Tajeddini, 2009).

Conclusions that can be drawn from examination of these papers are:

1. innovation activity increases with the hotel size (Pikkemaat and Peters, 2005; Orfila-Sintes et al., 2005, Orfila-Sintes and Mattsson, 2007; Groizard and Jacob, 2007; Pikkemaat, 2008, Martinez-Ros and Orfila-Sintes, 2009);

2. innovation activity increases with the hotel category (Orfila-Sintes et al., 2005, Jordi, 2005; Pikemaat, 2008; Tajeddini, 2009);

3. innovation activity is higher in hotels operating in hotels chains (Orfila-Sintes et al, 2005). Moreover, Ottenbacher and Gnoth (2005) found that hotels operating in chains and independent hotels vary greatly in terms of the elements determining the success of new services;

4. news in the IT-a area are one of the most frequent areas of innovation (Jacob et al, 2003; Pikkemaat and Peters, 2005; Groizard and Jacob, 2007; Pikkemaat, 2008) and are expected to remain as such in foreseeable future. Namely, as the main trends in service innovation experts name technological improvements, services personalization and customer relationship management (Verma et al., 2008);

5. innovation activity has a positive effect on:

   (a) company image (Jacob, 2003),
   (b) hotel performance (Agarwal et al, 2003; Orfila-Sintes, and Matsson, 2007; Matsson and Orfila-Sintes, 2009; Tajeddini, 2009) and
   (c) hotel guests satisfaction with hotel services (Jacob et al, 2003);

6. certain forms of cooperation have a positive impact on hotel innovation (Sørensen, 2004; Orfila-Sintes et al, 2005; Pechlaner et al, 2005; Pikkemaat and Weiermair, 2007; Sundbo et al, 2007; Pikkemaat, 2008);

7. personnel training is an important factor affecting hotel innovation activity. On one hand, evidence is found that hotels implementing more innovation report higher level of employee training (Orfila-Sintes et al, 2005; Orfila-Sintes and Mattsson, 2007), while on the other, the lack of qualified employees is reported as an important obstacle for innovation (Jacob et al, 2003);

8. professional leadership is an important factor of hotel innovation activity (Sundbo et al, 2007; Orfila-Sintes et al, 2005; Martinez-Ros and Orfila-Sintes, 2009);

9. the most important reasons for introducing innovations are improving quality and satisfying guests' needs (Jacob et al, 2003; Pikkemaat and Peters,2005).

In certain elements, there is also disagreement:

1. Orfila-Sintes and Matsson (2007) conclude that the strategy of differentiation reduces the likelihood of introducing certain sorts of innovation, while Pikkemaat and Peters (2005) find that hotels pursuing that strategy implement more innovation;

2. empirical results of Orfila-Sintes et al. (2005) support the assumption that in terms of technological innovations the hotel industry is supply-driven (Hjalager, 2002), while Jacob and Groizard (2007) show that hotels often actively cooperate with domestic and foreign suppliers of technology equipment;

3. studies have generally confirmed the positive impact of innovation activity on hotel performance, be it objective/quantitative performance indicators (Orfila-Sintes, and Matsson, 2007; Matsson and Orfila-Sintes, 2009) or performance subjectively evaluated by the hotel manager (Agarwal et al, 2003; Jacob et al, 2003; Tajeddini, 2009). However, Pikkemaat and Peters (2005) in the Alpine small hotel sector found no statistically significant relationship between the innovation activity and the hotel manager's degree of satisfaction with the revenue/profit.

What is important to note is that the actual number of empirical research is quite modest. Namely, a deeper look at the existing body of research reveals that it is to a large extent based upon two empirical researches with a relatively large sample - one conducted in Spain on a sample of 331 hotels on two occasions (2001, 2004) (Orfila-Sintes et al, 2005; Orfila-Sintes and Mattsson, 2007; Martinez-Ros and Orfila-Sintes, 2009, Mattsson and Orfila-Sintes, 2009, and partly Sundbo et al, 2007) and the other conducted in Austria on 107 small and medium-sized hotels (Pikkemaat and Peters, 2005; Pikkemaat and Weiermair, 2007; Pikkemaat, 2008). Spain is a European hospitality and tourism giant dominated by large hotels, while on the other hand, Austrian accommodation offer is characterized by family, small and medium-sized hospitality firms. Therefore, these two studies give an insight on two very distinct parts of hotel industry, and that has to be taken into account when comparing the data and generating conclusions.

Finally, reviewing (small) number of surveys on innovation activity in hotel sector (and tourism in general) the obvious conclusion is that this research area is poorly covered. Moreover, conducting further empirical studies in different environments/countries is needed for answering many opened questions and deriving valid conclusions. This article aims at contributing to that goal.

3 EMPIRICAL RESEARCH ON INNOVATION ACTIVITY IN HOTEL SECTOR IN CROATIA

The empirical research was carried out in hotels in Croatia in the period from early April until the end of August 2010. The list of hotels was taken from the web pages of Croatian Ministry of Tourism and at the time it included 559 hotels (http://www.mint.hr/UserDocsImages/100311-kategoriz.pdf). They were all sent a questionnaire designed specifically for this research. The resulting sample size was 68 hotels (12.76%) which by its structure largely correspond to the population structure (Figure 1).

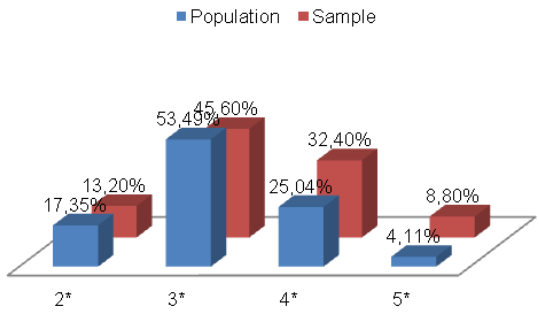

FIGURE 1: Population and sample structure according to hotel category
Source: Authors calculation

The adapted CIS methodology was applied so innovation activity was measured using the Likert scale. The respondent (Hotel Manager) was asked to give an estimation of the grade of introduction for each type of innovation in the hotel in the period of last three years. The offered range was from 1 (none) to 5 (to a very large extent). Since the measurement scale was ordinal, instead of the number of innovations introduced the research generated the grade of innovation introduction for each hotel. When using ordinal measurement scales, the use of median values is appropriate. However, using the median value does not allow

the calculation of aggregate indicators. Therefore, the only appropriate option is average rate, i.e. arithmetic mean, since it enables the necessary aggregation of data relating to innovation activities. Furthermore, for service and process innovations two categories are given namely: *a brand new* (discontinued) *innovation* and *significant improvement* (incremental) *innovations*. To calculate the overall assessment of innovation in these two categories, the average value has to be used, as well.

The Table 2 provides details about the observed innovation activity in the hotel sector. The innovation activity value is 3.31 with a standard deviation of 0.947. The variation coefficient value is 28.57% which is below the acceptability limit of 30% (Rozga, 2009), meaning that the mean value as a good representative of total results.

TABLE 2: The average grade and measures of dispersion for the total hotel innovation activity

	Average grade	Standard deviation	Variation coefficient (%)
Total number of innovations	3,314	,947	28,57574

Source: Authors research (N=68).

Based on the data provided, it can be concluded that the hotels from the sample are moderately innovative. Since in previous research the measured innovation activity ranged from low innovative for small and medium-sized hotels in Austria (Pikkemaat, 2008) to highly innovative Baleares hotels in the Latin-American countries (Jacob and Groizard, 2007), it is clear, as presumed, that innovative activity of hotels is country/context specific. It is also important to note that the above studies used different, *ad hoc* approaches to the innovation activities measurement and that poses limits to results comparisons.

In order to provide a more detailed analysis, a cluster analysis of hotels based upon their innovation activities is performed. Cluster analysis is one of the multivariate techniques used to group observations or variables into smaller groups or clusters. The aim of the analysis is to classify observations regarding their similarities and differences according to the measurement characteristics. It is

used to reveal the optimal number of clusters (groups) with a greater homogeneity of observations/variables within clusters and the greater heterogeneity between them. As such, this multivariate statistical method is an appropriate technique for minimizing variations within groups and maximizing the differences between them (Rozga, 2007, pp. 45). Hierarchical clustering begins with n clusters. From step to step the observations or existing clusters append to the second cluster and the procedure ends with one cluster, which is evident in the dendogram in Figure 2. In addition, the dendogram indicates grouping the observations from this research into two clusters: the cluster of highly-innovative (45) and the cluster of low-innovative (16) hotels (Table 3).

TABLE 3: Clusters according to innovation activity

		Average grade of total innovations	Number of units in cluster
Clusters according to innovation activity (Ward method)	Highly-innovative	3,74	45
	Low-innovative	2,26	16

Source: Authors research (N=68).

The cluster analysis is exploratory and descriptive and does not belong to the inferential statistics. Therefore, "cluster analysis always achieves the classification, good one or bad one" (Rozga, 2009, p. 48), and that is often cited as its main drawback. In order to discard this doubt, the statistical significance of differences between the obtained clusters was tested using the parametric t-test. The results given in Table 4 signify the difference between hotels according grouped into the two clusters with a significance level of 1%. (p= 0.00). These results show that the resulting hotel classification is acceptable.

TABLE 4: T-test for the difference in innovation activity between the two clusters

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Uk.br.inovacij	Equal variances assumed	,042	,839	9,619	59	,000	471284722222221	52950669846818	165231138783290	777338305661151
	Equal variances not assur			9,592	26,285	,000	471284722222221	53393065922437	156147304937795	786422139506647

Source: Authors research (N=68).

Beside the overall innovation activity, an analysis according to innovation types is given (Table 5).

TABLE 5 Average grade and measures of dispersion for innovation types

	Arithmetic mean	Standard deviation	Coefficient of variation (%)
Total innovations	3,314	,947	28,57574
Service innovation	3,895	,791	20,30809
Process innovation	3,282	,942	28,70201
Organizational innovation	3,144	,882	28,05344
Marketing innovation	3,769	,782	20,74821

Source: Authors research (N=68).

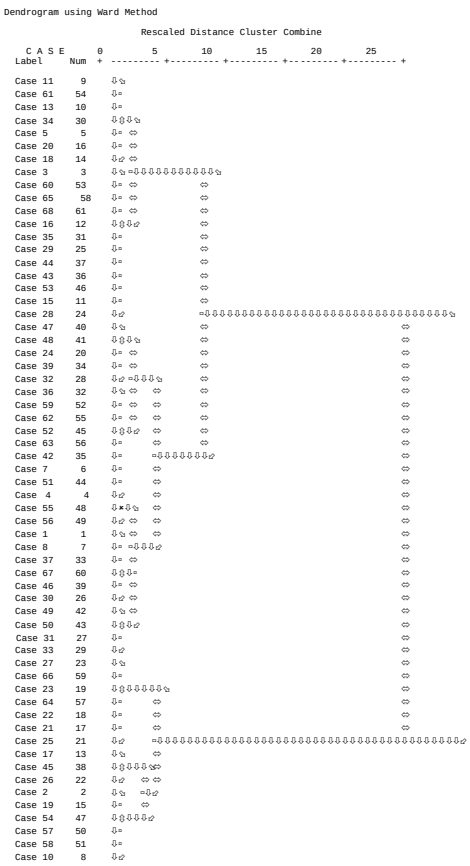

FIGURE 2: Clustering dendogram of hotels according to innovation activity
Source: Authors research (N=68).

The data show that the degree of innovation activity is the highest for service innovation and the lowest for organizational innovation. It is also shown that they are statistically significantly different. It was confirmed by Friedman test for several dependent samples (Table 6). From the data given in Table 5 it can also be concluded that hotels mainly introduce service and marketing innovations, while process and organizational innovations are introduced to a lesser extent. This result is in opposition with the often proclaimed thesis about the

utmost importance of the service sector organizational innovation confirmed by a number of empirical studies (Tether, 2004; Tether and Howells, 2007). It also confirms the heterogeneity of service sector in terms of innovation activity.

TABLE 6: Friedman test for innovation activity by innovation type

N	42
Chi-Square	27,297
Df	3
Asymp. Sig.	,000

by Friedman Test

Source: Authors research (N=68).

In addition, the respondents were asked about the nature of new services introduced in their business. Specifically, the question was whether the services introduced were new just for the hotel in question or new for the market hotel operates in. Among 68 hotels that participated in the survey, 58 responded to this question. Out of them, 34.48% hotels have introduced new or significantly improved services to the market before their competitors (which refers also to services already available in other markets). The remaining 65.52% hotels have introduced novelties new for their hotel, but not for the market they operate in. This indicates that a significantly greater proportion of hotels tend to imitate and copy innovations already introduced by their competitors. Due to the high "visibility" of the tourism service innovations, this finding is highly expected (cf. Hjalager, 2002).

Furthermore, the empirical studies have shown that technological innovations are one of the most common areas of innovation in hotels (Jacob et al, 2003; Pikkemaat and Peters, 2005; Groizard and Jacob, 2007; Pikkemaat, 2008). On the other hand, in terms of technological activities, tourism industry is claimed to be supplier-dominated (Hjalager, 2002). However, in hotel industry, this thesis is tested only to a limited extent and has resulted in inconsistent findings. Specifically, Orfila-Sintes et al. (2005) have confirmed it while Jacob et al. (2003) have found that, in the tourism sector, companies actively participate in the development of technological equipment and Jacob and Groizard (2007) confirm that finding in the hotel sector. With the purpose of testing the validity of this hypothesis within the Croatian hotel sector, the questionnaire also included a question dealing with technological innovations.

The results (Figure 3) show that most hotels (41.18%) belong to the archetypal category of supplier-dominated hotels which simply implemented technological solutions developed by their suppliers. The next category consists of hotels which adapted systems developed by other specialized suppliers (29.41%) and the third of hotels which developed and designed technological systems on their own (25%). Accordingly, it is evident that the supplier-dominated hypothesis in terms of technological equipment and systems is confirmed within the Croatian hotel sector.

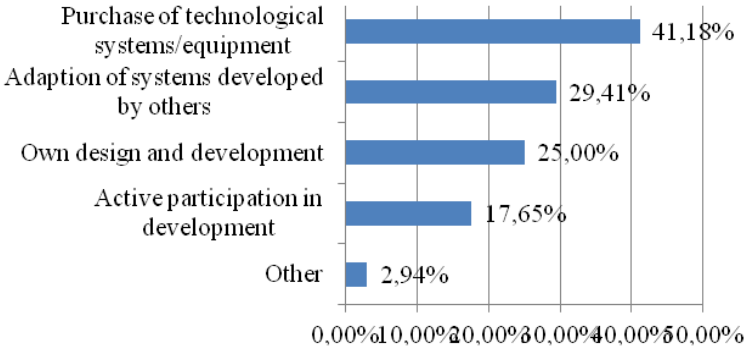

FIGURE 3: The development and sources of technological innovation

Source: Authors research (N=68).

With purpose of investigating the relationship between the hotel features and their innovation activity, the logistic regression was estimated and its results are given in Table 7.

TABLE 7: Logistic regression for hotel features and hotel innovation activity

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1(1)	Number of beds	,003	,002	1,492	1	,222	1,003
	Seasonal/all-year round openness	,004	1,276	,000	1	,998	1,004
	Occupancy (in days)	-,001	,010	,004	1	,947	,999
	Ownership type*	,082	,584	,020	1	,889	1,085
	Business type**	1,387	1,035	1,793	1	,181	4,002
	Number of employees	-1,112	,604	3,385	1	,066	,329
	Type of management***	-,922	,842	1,199	1	,273	,398
	Location****	,108	,926	,014	1	,907	1,115
	Constant	-3,640	5,749	,401	1	,527	,026

Variable(s) entered on step 1: @ No. of beds, @ Seasonal/all-year round, @ Occupancy, @ Ownership type, @ Type of business, @ No. of employees, @ Type of management, @ Location

**Ownership type: a) private domestic, b) public-private domestic, c) foreign, d) mixed e) other*

***Business type: a) management contract, b) franchise, c) consortium, d) autonomously, e) other*

****Type of management: a) manager, b) owner, c) family*

*****Location: a) island, b) seaside, c) continent*

Source: Authors research (N=68).

From the above results it is evident that none of the estimated coefficients is statistically significant. That means that none of the hotel features is a statistically significant factor of the hotel innovation activity[5]. It is especially important to note that the hotel size (measured by number of beds/rooms) is not a significant factor in this manner. Namely, in the economic theory the thesis that the innovation activity increases with the firm size is generally accepted, although its validity in tourism is under the dilemma. In order to

[5] With reservation only, the number of employees can be a taken as a significant factor affecting the probability of innovation implementation, at the theoretical significance level of 10% and with the negative sign. It means that the higher the number of employees in hotel, the lesser the probability that the hotel belongs to the highly innovative category.

undoubtedly confirm the inexistence of this relationship, correlation between the size of the hotel (measured by number of rooms) and innovation activity of hotels is calculated (Table 8).

TABLE 8: Correlation between the number of rooms and total innovation activity of hotels

		Total number of innovations	Number of rooms
Total number of innovations	Pearson Correlation	1	,193
	Sig. (2-tailed)		,115
	N	68	68
Number of Rooms	Pearson Correlation	,193	1
	Sig. (2-tailed)	,115	
	N	68	68

Source: Authors research (N=68).

The results confirm that there is no correlation between these two variables ($p = 0.115$, $p = 0.193$). Therefore, the conclusion is that the innovation activity of Croatian hotels does not depend upon the hotel size. It points to the fact that small hotels are not far behind their big counterparts in the area of innovation. Having in mind that it is a hotel subsector that is growing in recent years in Croatia mainly due to favourable government incentives; this finding confirms their viability and to some extent justifies the government support. It also adds weight to the flexibility of small hotels/tourism firms and its importance for their overall activity.

4 CONCLUSION

This paper deals with an emerging and yet not often researched issue of innovation in tourism with the focus on hotel sector. In order to shed light on this important phenomenon, an empirical research in the hotel sector in Croatia was conducted following an adapted CIS methodology. The results show that hotels in Croatia are moderately innovative and according to innovation activity can be grouped into two clusters – the high-innovative and the low innovative one – whose innovation activity is statistically different. The research revealed

the prevalence of service innovations followed by marketing ones, while, contrary to previous research, organizational innovations are at the lowest level. Furthermore, most hotels tend to "imitate". i.e. introduce novelties already implemented by their competitors. As far as technological innovations are concerned, the results revealed the supplier-dominated character of the Croatian hotel sector. Finally, research results suggest that none of the hotels' characteristics is statistically significant factor of their innovation activity. That is a surprising fact, especially for the relationship between the hotel size and innovation activity. It shows that small hotels do not lag behind large hotels in innovation. Generally, it can be concluded that there is a place for improvement in all areas of innovation, especially in organizational innovations. Having in mind that innovation is one of the major drivers of competitiveness, hotel managers are prompted to rethink and reinforce their innovation efforts. Also, regulatory bodies are to rethink their actions and activities needed to stimulate such behavior. In this sense, various measures in the area of tourism firms financing are to be rethought as financing problems are one of the major obstacles of hotels' innovation activities.

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