IMPLEMENTATION IMPACTS OF ICT BASED INNOVATIONS ON THE PERFORMANCE OF TRAVEL AGENCIES IN CROATIA

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MASTER THESIS

IMPLEMENTATION IMPACTS OF ICT BASED INNOVATIONS ON THE PERFORMANCE OF TRAVEL AGENCIES IN CROATIA

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TABLE OF CONTENTS:

Acknowledgements: ..... **iv**

List of abbreviations ..... **v**

1. INTRODUCTION **1**

1.1. Statement of the problem **2**

1.2. Purpose of the study **3**

1.3. Research hypotheses **4**

1.4. Research objectives **5**

1.5. Methodology **5**

1.6. Research contribution **7**

1.7. Structure of the thesis **8**

2. INNOVATION CONCEPT AND ITS TOURISM SECTOR APPLICABILITY **9**

2.1. Defining innovation **9**

2.2. Types of innovation **11**

2.2.1. Product innovation **11**

2.2.2. Process innovation **12**

2.2.3. Marketing innovation **13**

2.2.4. Organisational innovation **14**

2.2.5. Other innovation typologies **14**

2.3. Innovation determinants and barriers towards innovating **18**

2.3.1. Knowledge **18**

2.3.2. Organisational characteristics of firms **21**

2.4. Innovation in services **23**

2.4.1. Innovation in tourism **26**

2.4.2. Innovation at the level of the firm **29**

3. INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) **34**

3.1. ICT deployment in the tourism sector **34**

3.2. Review of relevant ICTs applications **38**

3.2.1. eMarketing solutions for travel agencies **39**
3.2.2. Mobile technologies **41**
3.2.3. Software support applications **42**

4. ANALYSIS AND EVALUATION OF THE FINDINGS **44**
4.1. Research methodology **44**
4.2. Descriptive data analysis **45**
4.3. Test of the proposed hypotheses **54**
4.4. Discussion of the results and research limitations **65**

5. CONCLUSION **68**

BIBLIOGRAPHY **70**
LIST OF FIGURES **74**
LIST OF TABLES **75**
APPENDIX A **77**
APPENDIX B **83**
SUMMARY **89**
SAŽETAK **89**

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List of abbreviations

ACAP	absorptive capability approach
BE	booking engine
CIS	community innovation survey
CM	channel manager
CRS	computer reservation system
GDS	global distribution system
ICT	information communication technology
IT	information technology
MNE	multi-national enterprises
OECD	organisation for economic co-operation and development
OTA	online travel agency
R&D	research and development
SM	social media
SME	small and medium enterprises
SMTE	small and medium tourism enterprises
T&T	travel and tourism

1. INTRODUCTION

Innovation as a term has been frequently used by the various actors in the tourism industry. Therefore, Kanter defines innovation as: „… 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. Innovation is the generation, acceptance and implementation of new ideas, processes, products or services“ (Kanter, 1983, as in Hall & Williams, 2008). Innovations follow many patterns and are of many kinds – often not technological – and it is difficult to point to one category of taxonomy (Sundbo et al., 2007). However, they need to be distinguished from inventions. As inventions represent ideas that have not reached a potential market segment, innovations are the ones being commercially exploited.

The tourism industry was among the early adopters of information and communication technology (ICT), such as the Computer Reservation System of the early 1950s and the adoption of Global Distribution Systems in the late 1980s (Dhaigude et. al, 2016). ICTs have undoubtedly become one of the most important elements of the tourism industry, as in few other economic activities are the generation, gathering, processing, application and communication of information as important for day-to-day operations (Buhalis, 2000). Changes in the ICT field have been rapid and swift, and since the infancies of their implementation, newer, more advanced inventions have been introduced. These include reservation systems and online travel agencies (such as Expedia), search engines and meta-search engines (such as Google and Kayak, respectively), destination management systems (such as VisitBritain.com), social networking and Web 2.0 portals (such as TripAdvisor), price comparison sites (such as Kelkoo) as well as individual suppliers and intermediaries' sites (Buhalis & Law, 2008).

The T&T industry is characterized by the presence of a large number of actors present at different levels of the value chain varying in size, functionality, location and level of autonomy (Dhaigude et. al, 2016). Travel Agencies are among thus actors. In Croatia, according to the official National Tourism Board in 2016, there has been 1107 registered travel agencies operating (http://croatia.hr/hr-HR/Putovanje-Hrvatskom/Turisticke-agencije, accessed 19.08.2017.). Among their various tasks the key one, for sure, is deemed to be productivity rising, as they are highly profit driven subjects. In the following sections of the work it will be explained how ICT innovations contribute to such rise of firms' productivity.

1.1. Statement of the problem

Over the past couple of years, the term ‘‘innovation’’ has increasingly been used to describe the behaviour of tourism enterprises, destinations, and the tourism sector (Hjalager, 2002). Tourism innovation has historically been viewed as either incremental or radical, a binary developed within manufacturing, and since radical innovation is rare any change has been deemed innovative (Brooker & Joppe, 2014). The tourism sector also has many new entrants, which have impacted on its organisation as well as its technologies, thus the problem of heterogeneity is an important issue for innovation (Aldebert et. al., 2010).

Through the existence of different innovation typologies (Abernathy & Clark, 1988; Sundbo, 1998; OECD Oslo Manual, 2005; Hjalager, 2002:2010) it is evident that the innovation concept still undergoes its practical use in the tourism sector. Meaning that its diffusion into tourism has yet not been fully completed. It is no wonder to such state since service industries, to whom tourism undoubtedly belongs, innovate, in certain ways, differently than manufacturing ones (Tether, 2005).

Researchers have been arguing for years now whether there is an existent link between firm characteristics and their innovation behaviour. While some state that the size of the firm suggests that larger enterprises innovate more (Hjalager, 2002; Sundbo et al., 2007.; Alonso-Almeida & Llach, 2013) others claim no significant link regarding that matter (Pivčević & Praničević, 2012). Geographical characteristics have also been studied upon, as well as organisational form, professional management, production system, etc., concluding that most of these factors are interrelated. One of the problems this study will battle is obtaining a list of innovation determinants which will be tested on the survey sample (travel agencies). The determinates will be chosen to be applicable on the tourism industry as a whole and extracted from the existing literature review.

The rapid development of ICT in the past couple of decades has underscored the importance of understanding historical patterns and predicting future trends, therefore knowing what has occurred in the past few years can help researchers better predict and plan for future development (Law et al., 2009). In the pre-Internet era tourism suppliers had no other choice but to use intermediaries, such as travel agents and tour operators, for their distribution functions (Buhalis & Law, 2008). With the introduction of ICT in the field there has been a certain fear of disintermediation. Traditional travel agencies were deemed to become extinct.

Not only could other actors in the tourism industry void travel agencies and cut distribution costs, but so could customers. Buhalis (2000.), almost two decades ago, predicted the survival of either budget oriented or niche market travel agencies. However, he did not neglect to state the role ICTs play in it.

Deploying ICTs into the tourism sector has accounted for a vast number of re-design opportunities in terms of the marketing mix 4P concept – namely product, place, price and promotion. Perhaps the most interesting changes emerging as a result of the revolution of ICTs is on the place-distribution elements (Buhalis, 2000.) An electronic marketplace has gradually emerged, and suppliers have developed Internet interfaces to communicate with clientele and partners to sell directly (Buhalis & O'Connor, 2005). It has been argued that ICTs are becoming more consumer-centric and will opt to provide more value added to the end-user.

Tourism is a profit driven industry and ICTs should contribute to profitability (Buhalis & O'Connor, 2005). Consequently, the adoption of new, not necessarily complex, technologies can lead to small process changes that may vest the company with high levels of efficiency (Alonso-Almeida & Llach, 2013). However, ICT investment and use do not give rise to generalized productivity improvements until firms and their workers have achieved the required technological, educational/training, organizational, business, labour, and cultural competencies (Torrent-Sellens et. al, 2016). Weight is therefore put on the importance of networking and innovation, paired with the ICT implementation.

Concluding, the general problem of this research is to state how the implementation of ICT innovations is reflected on the productivity of travel agencies in Croatia. The productivity of the firm will be measured using key performance indicators. Namely, financial performance, competitiveness, employee performance, operational efficiency, innovativeness and service quality (Kala & Bagri, 2014).

1.2. Purpose of the study

The intention here is to study and understand tourism firms' innovation behaviour (Sundbo et al., 2007). The innovation concept and its diffusion into the tourism sector will be presented. Determinants prompting innovation will be looked upon as well, and various firm characteristics put in correlation with its innovation behaviour. Like previously mentioned innovations are of many kinds, and the number of different typologies vast. Classification

onto technological and non-technological innovations represent one of those typologies. Since the key issue are ICTs, it is evident that technological innovations will be focused upon.

Some research of this kind has already been done on the sample of travel agencies, but it's mostly of new origin (Alonso-Almeida & Llach, 2013; Dhaigude et. al, 2016) with the primal focus of the Spanish tourism sector. The conclusions of these studies could not be joint together due to various innovation determinants, affecting tourism firms, that have already been mentioned. Thus, the importance of broadening the research field with new insights arises.

Empirical research will be done as it is important to obtain results regarding rate of use, variety of use and perceived usefulness of ICTs. Also, this work will focus on generating a list of most relevant ICT innovations within the tourism sector. It will be surveyed if and in which ratio are the travel agencies keen on implementing them. Together the collected data and its statistical analysis will help to explain the role of ICT innovations on productivity growth.

1.3. Research hypotheses

Based upon the previously stated problem and purpose of the work, research hypotheses will be laid down. The hypotheses are the following:

H1: *Higher ICT innovation implementation rates account for higher profit levels*

- This hypothesis tries to establish a positive relationship between higher levels of ICT implementation within a travel agency and their financial performance indicators. Suggestion is that the more ICT applications a single firm uses the bigger their profit.

H2: *Higher ICT innovation implementation rates account for higher levels of market share*

- The second hypothesis is stating a positive relationship between higher levels of ICT implementation and higher competitive advantage of a firm.

H3: *The implementation ratio of ICT innovations in a travel agency is positively linked with its number of employees*

- The job of the third hypothesis is to test whether larger travel agencies (in the scope of number of employees) innovate more than smaller ones. This statement has been a critical issue in a vast number of academic research so far.

H4: *The implementation ratio of ICTs in a travel agency is positively linked with the growth of organisational performance*

- The fourth hypothesis tries to establish a positive relation between the ICT implementation ratio and the improvement of both internal (facing towards organisational schemes) and external (facing towards the customer) efficiency.

After empirical research in the form of a survey carried out, data collected and statistically analysed the aforementioned hypotheses will be accepted or discarded. Later on, general conclusions will be extracted.

1.4. Research objectives

Steaming from the hypotheses and the very subject of this paper the main objective is to empirically analyse and test the impact ICT innovation implementation has on the performance indicators of travel agencies in the Republic of Croatia. Alongside the main objective particular ones are arising as well:

- Theoretically analyse and define firm characteristics having a positive impact on the firms' innovation behaviour
- Theoretically analyse and define firm characteristics having a positive impact on firms' ICT implementation rate
- Analyse the current ICT implementation ratio and tendency to innovate among travel agencies in Croatia
- Analyse rate of use, variety of use and perceived usefulness of implemented ICT innovations among travel agencies in Croatia
- See which ICT applications are most used among travel agencies in Croatia
- See which type of innovation (product, process, marketing or organisational) prevail among the research subjects

1.5. Methodology

The thesis will contain both theoretical as well as an empirical research.

The theoretical analysis will be based upon a literature review of a selection of essential books, scientific articles, online and other relevant sources gathered. The field of work presented will be the innovation concept with implications to its deployment into the tourism sector, as well as ICT implementation and an overview of the most relevant ICT innovations

nowadays. In this part, secondary research will be undertaken, analysing existing data both inland and abroad.

Methods of data analysis that will be used in the theoretical part are the following (Zelenika, 2000):

1. Descriptive Research - is a process of simplified description or depiction of facts, processes and objects in the nature and society; their empirical confirmation of relation and representation, but without deeper scientific interpretations and explanations. This method will be used at the beginning chapters of the thesis for defining their main actors and subjects.
2. Comparative Research - is the process of comparing the same or related facts, processes and relations, or the determination of their similarity in behaviour and the intensity and differences between them. It will be used to determine similarities in the innovation and ICT implementation patterns of different actors of the tourism sector.
3. Analysis – is the process of scientific research and explanation of facts through the breakdown of complex reproductions into their simpler components and elements, accompanied by the study of each part separately and in relation to other entities.
4. Synthesis – the method of synthesis is the process of scientific research and explanation of facts by merging, composing simple reproductions into complex, connecting distinct elements, processes and relations into a unified whole. It is the opposite of the analysis method.
5. Induction – the inductive method is a systematic and consistent application of an inductive way of concluding in which individual or specific facts are merged and a general judgement reached. In the literature, it is also referred to as the “bottom – up” approach.
6. Deduction – Deductive method is the systematic and consistent application of the deductive approach of concluding, in which the general statement, or hypothesis, is broken down and concrete, individual conclusions reached. It is also referred to as the “top – down” approach.

7. Compilation method - is the process of taking over another’s results of research work or observations of attitudes, conclusions and insights. This paper will use data and findings that are the result of research done by other authors with the notion of adequate source referencing.

The empirical part will focus on collecting primary data. Primary data will be collected with the help of an Internet based survey which will be distributed to all travel agencies in Croatia having a valid e-mail address. With the total count of 1107 travel agencies available on the National Tourism Board web site, agencies that do not have an e-mail address will be excluded from this research for obvious reasons. The collected data will be processed in the SPSS statistical package, and the results adequately interpreted using graphical modelling.

The reference literature framework that is and will be used for the thesis, is given at the end of this research paper.

1.6. Research contribution

The contributive aspect of this work is laid down in two main points of view:

Firstly, to help shed light on the current state of ICT implementation ratio among the relevant research subjects, travel agencies in the Republic of Croatia. Alongside, the innovative behaviour of these subjects, as what determines it, will be looked upon. In the Croatian tourism industry, to today, relevant literature among this field has been scarce and scattered. For that a reasonable explanation exists, namely in the broad scope of the tourism sector itself, as well as its service industry nature. General conclusions and consolidation of existing data are hard to extract and obtain as accommodation units, restaurants, attractions, intermediaries, etc., all have different determinants that constitute them. The favourable nature of the hotel sector in research projects tackling both ICT and innovation is also evident. Thus, it is seen as a matter of necessity to broaden the number of research literature, obtain a significant count of quantitative data and make efforts towards filling the existing research gap.

The benefit of this work may have implications on the affected parties. Research results may serve as a baseline for further improvement. To help foster further ICT implementation and to trigger the innovative behaviour mindset, as well as eliminate knowledge barriers hampering the latter is the ultimate objective streaming from this work.

Secondly, policy implications dealing with the creation of a Tourism Innovation System are non-existent on the national basis. The government's main objectives are to raise productivity among its various economic branches. Setting a favourable environment embedded by high levels of innovation and competitiveness is a good means to do so. Thus, the results of this work could be a wakeup call for policy makers to provide the necessary institutional framework for innovation, which has been missing for far too long.

1.7. Structure of the thesis

Contents of the thesis paper will be split into 5 main chapters, including the introductory and concluding chapters.

Chapter one, *Introduction*, is the full content of this paper. Serving the reader to understand the subject of the thesis as a whole. Therefore, it tackles the research problem, purpose, hypotheses and objectives. The used methodology will be presented, as well as the contribution the work holds.

Moving to chapter two, *Innovation concept and its Tourism sector applicability*, the innovative behaviour of a firm and what drives it will be contemplated. Firstly, however, the broad definition of innovation and their taxonomy will be laid down. Obstacles that hamper innovation will be stated. Finally, it all sums up to the process of innovation diffusion into tourism.

ICTs, as the third chapter, will present a showing of the most relevant technological applications current today. The Internet, wireless and mobile technologies, video and audio technology will be presented among others, with a focus on applications used by travel agencies.

Analysis and evaluation of the findings, as the centrepiece of the work is referring to data processing. Based on the results of the previous step, the pre-defined hypotheses will be accepted or discarded.

Finally, based on all of the previous chapters, in the *Conclusion* part, the main highlights will be summed up and future recommendations made. Bibliography, list of figures and tables, the survey questionnaire and the summary are concluding the work.

2. INNOVATION CONCEPT AND ITS TOURISM SECTOR APPLICABILITY

The following chapter deals with the concept of innovation. Firstly, the definition of the term will be laid down. A transition from the narrow technological classification in the early definitions to later, broader encompassment of institutional and organisational innovations is evident. Secondly, the innovation typologies will be discussed. Primarily focus is shifted onto the OSLO Manual taxonomy. The third part of this chapter is dealing with what drives innovations, as well as what hinders firms from innovating. Finally, in the fourth part innovation in services with the focus on its diffusion in tourism will be presented.

2.1. Defining innovation

Innovation as a term, derived from the Latin "*innovationem*", meaning to renew or change, does not have one single handed definition. To today more than 60 numerous scientific explanations exist, neither one of them being declared as the official. As the term evolved through time it gradually started encompassing broader contexts and changing its scope.

One of the early definitions of innovation is presented by its leading theoretician, Joseph Schumpeter (1939), and states:

> „*Recalling that production in the economic sense is nothing but combining productive services, we may express the same thing by saying that innovation combines factors in a new way, or that it consists in carrying out New Combinations*."

Schumpeter, subsequently, distinguished five areas in which companies can introduce innovation (OECD, 2006.):

1. Generation of new or improved products
2. Introduction of new production processes
3. Development of new sales markets
4. Development of new supply markets
5. Reorganisation and/or restructuring of the company

These various domains are later on caught by Kanter's broader definition of innovation:

„*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. Innovation is the generation, acceptance and implementation of new ideas, processes, products or services.... Acceptance and implementation are central to this definition; it involves the capacity to change and adapt.*“ (Kanter, 1983, as in Hall & Williams, 2008).

Edquist (1997) in his book Systems of Innovation, defined the term as: „*Innovations are new creations of economic significance. They may be brand new but are more often new combinations of existing elements. Innovations may be of various kinds (e.g., technological and organizational).“*

Using the term economic significance, a distinction between innovations and inventions is made, which often are to be seen as synonyms. As inventions represent ideas that have not reached a potential market segment, innovations are the ones being commercially exploited. Meaning that innovations are inventions which have been diffused and accepted by the market.

The OSLO Manual, a guideline for collecting and interpreting innovation data developed by the Organisation for Economic Co-operation and Development (OECD) was released, over the course of 13 years, in three publications. The first two issues divided innovation as technological and non-technological, mainly focusing upon the industrial sector of the economy. However, as institutional and organisational change as well as the service industry gained more momentum the final publication abandoned the aforementioned distinction and defined innovation as: „*An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method, in-business practices, workplace organisation or external relations.*” (OECD, 2005.)

Lastly, shaped by the need for a firm’s competitiveness and rapid adjustment to change in its environments, another scientific definition has emerged: “*Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.”* (Baregheh et al., 2009).

Based upon the various definitions listed above some common grounds about the nature of innovation can be set:

1. Innovation does not necessarily mean creation ex nihilo
2. Innovation does not necessarily mean progress (technical, economic or social)
3. Innovation does necessarily bring success (OECD, 2006)

Innovation in itself has elements of newness but is not equal to creativity. Moreover, innovation is not excluded to a country level, but can take place on a specific market or the level of a firm, which will be discussed later in more detail. It does not always advance the economic benefit of all stakeholders as it outperforms existing products or processes. Also, sustainability is not an inclusive component of innovativeness. Finally, even not all innovations turn out into instant success, their effects do trigger competitiveness among firms.

To conclude, different authors who adopt the systems of innovation approach mean different things by the term innovation. This is not necessarily problematic, since definitions and analytical distinctions are not right or wrong (Edquist, 1997). Definitions change and adapt over time, therefore innovation should not be looked upon as a single hand interpretation, but as an ever changing concept.

2.2. Types of innovation

Alike the variety in definitions taxonomies are adjusted to fit the field they cover. Manufacturing and service industries have distinctive features among them which are reflected in a diversity of innovation types. The main typology used in this thesis will be the one obtained from the OSLO Manual, classifying innovation in 4 categories: product, process, marketing and organisational. It maintains the largest possible scope and is also used, to some extent, by various other scholars in their works (Schumpeter, 1934, 1942; Utterback & Abernathy, 1975; Edquist 2001). Also, CIS[1] surveys commonly use this classification.

2.2.1. Product innovation

According to the OSLO Manual a product innovation is: "*A product innovation is the introduction of a good or service that is new or significantly improved with respect to its*

[1] Community Innovation Survey – a survey, undertaken by EU member states with a 2 year spam frequency, which goal is to measure innovation activity in enterprises.

characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics."

Product innovations can utilise new knowledge or technologies or can be based on new uses or combinations of existing knowledge or technologies. The term "product" is used to cover both goods and services. They encompass:

- introduction of new goods and services
- significant improvements in the functional or user characteristics of existing goods and services

New products are goods and services that differ significantly in their characteristics or intended uses from products previously produced by the firm. Significant improvements to existing products can occur through changes in materials, components and other characteristics that enhance performance like design and service provision (OSLO Manual, 2005).

Product innovations can be relatively easy distinguished among other innovation types as they represent the end-feature for the end user. However, innovations are not exclusive to each other and borderline cases are common. Meaning that they can be classified, for example, as a marketing and process innovation at the same time.

2.2.2. Process innovation

A process innovation is defined by the OSLO Manual as: *"A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software."*

Production methods involve the techniques, equipment and software used to produce goods or services. Delivery methods concern the logistics of the firm and encompass equipment, software and techniques to source inputs, allocate supplies within the firm, or deliver final products. Process innovations also cover new or significantly improved techniques, equipment and software in ancillary support activities, such as purchasing, accounting, computing and maintenance. (OSLO Manual, 2005).

Examples of process innovations are:

- implementation of new/improved ICT
- tracking systems and shipping software
- new analytical solutions
- computerized management and monitoring systems, etc.

2.2.3. Marketing innovation

Marketing innovation is defined by the OSLO Manual as *"A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing."*

The distinguishing feature of a marketing innovation compared to other changes in a firm's marketing instruments is the implementation of a marketing method not previously used by the firm. The new marketing method can either be developed by the innovating firm or adopted from other firms or organisations and can be implemented for both new and existing products. (OSLO Manual, 2005).

As the aforementioned definition contains the term "product" it is somewhat possible to mistake these two types of innovation, as a marketing innovation is considered a change in product packaging or design. However, if those changes do not significantly alter the functional or user characteristics of a product they remain simple marketing innovation.

Among others marketing innovations include:

- branding
- new product packaging for a new market segment
- consumer relationship systems
- introduction of new distribution channels
- pricing innovations, etc.

2.2.4. Organisational innovation

Lastly, the Manual refers to organisational innovations as: *"An organisational innovation is the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations."*

The distinguishing features of an organisational innovation compared to other organisational changes in a firm is the implementation of an organisational method (in business practices, workplace organisation or external relations) that has not been used before in the firm and is the result of strategic decisions taken by management. (OSLO Manual, 2005).

Organisational innovations can be seen on an intra- and inter-organisational level and include the following:

- education and training systems (teambuilding)
- cross-functional teams
- reduction of hierarchical levels
- supply chain management
- quality and environmental audits
- cooperation/networks/alliances, etc.

Finally, the Oslo Manual (2005) recognizes 5 areas that do not represent innovations of any kind:

- ceasing to use a process, a marketing method, or an organisation method, or to market a product, even if the undertaken changes improve a firm's performance
- simple capital replacement or extension (the purchase of identical models of installed equipment, or extensions and updates of existing equipment and software)
- changes resulting purely from changes in factor prices
- customisation (tackling product innovations)
- regular seasonal and other cycling changes

2.2.5. Other innovation typologies

Innovations take many forms and can be classified in very different ways, but especially in terms of 'newness', 'focus' and 'attributes'. Schumpeter himself recognized that innovation could take many forms: creating new products, development of new methods of production, opening of new markets, capturing of new sources of supply and new organizational forms

(Hall & Williams, 2008). His breakdown represented one of the first innovation taxonomies in the years to come. It would far exceed the scope of this work to overlook every single existing type, thus only the few most cited and relevant ones will be presented.

Traditional categorisation of innovation divides it into incremental or radical, focusing on the created impacts. Incremental innovations usually exploit already existing forms or technologies. Firms introduce minor changes to existing products, improving or reconfiguring it to serve other purposes. It often reinforces the growth of productivity and the dominance of existing firms and over time it may have significant economic consequences. Despite their importance, they may be unnoticed. On the other hand, radical innovations, frequently called as breakthrough or discontinuous innovations represent something absolutely new based on different scientific or technological principles. It opens up new markets and provides new applications. Radical innovations create significant difficulties for established firms and existing business models by destroying their competitive position (Brandão, 2014).

Abernathy and Clark (1985) are basing their model determining the capabilities of the firm in technology and production opposed to markets and linkages to customers. Their famous transilience map is shown in Figure 1.

The model identified four types of innovation:

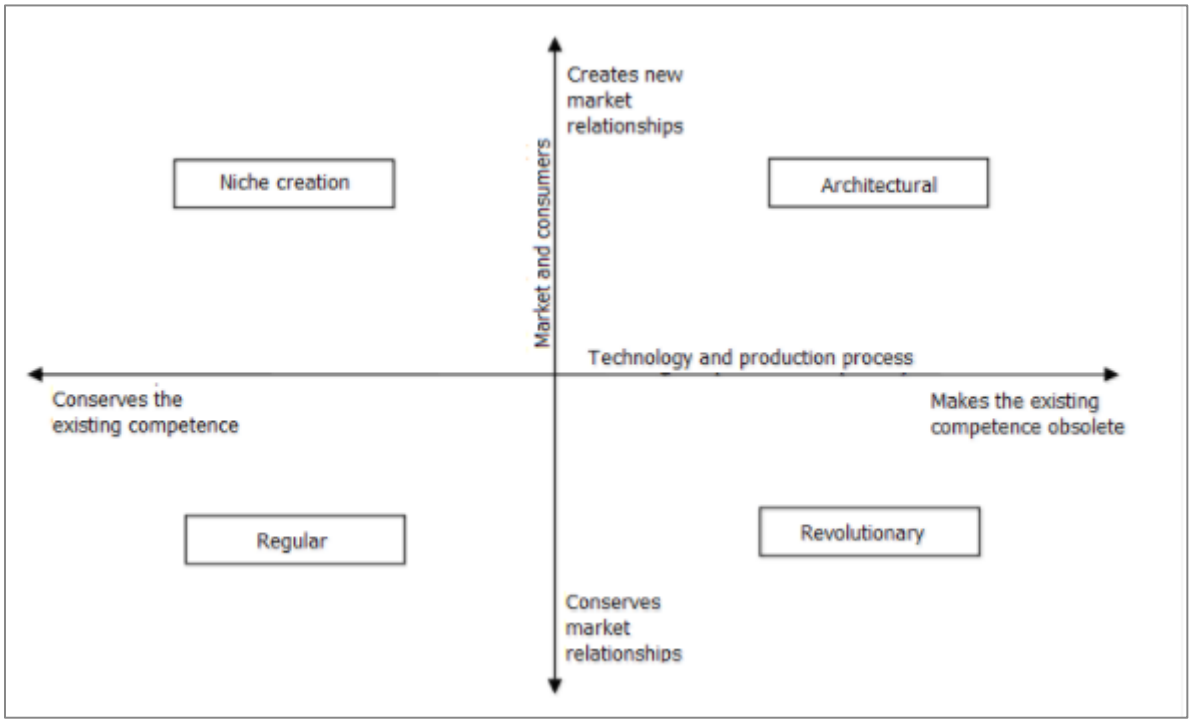
- Niche - opening new market opportunities through the use of existing technology is central to niche innovations. In some instances, niche creation involves a truly trivial change in technology, which main focus is to match customer needs. But may also appear with significant new product introductions, technical refinements, and even technological shifts.

- Regular also known as incremental - involves change that builds on established technical and production competence and that is applied to existing markets and customers. The effect of these changes is to entrench existing skills and resources.

- Revolutionary also known as radical or breakthrough - innovation that disrupts and renders established technical and production competence obsolete, yet is applied to existing markets and customers.

- Architectural - new technology that departs from established systems of production, and in turn opens up new linkages to markets and users, is characteristic of the creation of new industries as well as the reformation of old ones. Innovation of this sort defines the basic configuration of product and process and establishes the technical and marketing agendas that will guide subsequent development. In effect, it lays down the architecture of the industry.

Figure 1. Transilience map of innovation breakdown



Source: Abernathy and Clark (1985)

Edquist (2001), classifies innovation somewhat similar to the first editions of the OSLO Manual. His division onto product and process innovation was in consistence with the primary focus falling on technical, rather than service industry. While the product class was further split on goods and services, depending on what was produced, processes were divided onto technological or organisational, concerning how they were produced.

Adams et al. (2006, as in Hall & Williams, 2008) identify three main ways to classify innovation:

- On the basis of newness. This was most famously captured by Schumpeter who distinguished between radical and incremental innovations.

- On the basis of the focus of an innovation, that is, on whether it centres on product, process, administrative or technological dimensions, amongst others.

- On the basis of the attributes of an innovation, or its descriptive properties, qualities or features, with a framework of five key attributes: compatibility, observability, relative advantage, trialability and complexity.

Taking a closer look on the above mentioned typologies a pattern of prioritizing manufacturing and the technological side of things prevails in the works of many scholars. That is not surprising to any matter as it imposes a logical explanation. Technological changes are more evident, easily recognised and classified. As service changes represent something less „real“ only due to their intangible nature.

A pioneer in tackling the innovation concept in the service industry, tourism respectively, was Hjalager. In her works (1994; 2002) she adapted Schumpeter's and Albernathy and Clark's taxonomies to the present industry state, recognising following categories:

- Product innovations consist of changed or entirely new services or products which are developed to the stage of commercialisation, and whose novelty should be evident to either producers, consumers, suppliers or competitors. Examples of new tourism products developed in recent years are: Loyalty programmes, environmentally sustainable accommodation facilities, and events based on local traditions.

- Process innovations tend to raise the performance of existing operations by means of new or improved technology, or by redesigns of the entire production line, e.g. as a result of process re-engineering. Process innovations can be combined with or result in subsequent product innovations. Recent examples of major process innovations in tourism are: Computerised management and monitoring systems, robots for cleaning and maintenance, and self-service devices.

- Management innovations consist of new job profiles, collaborative structures, authority systems, etc., often in combination with the introduction of new products, services and production technologies. Management innovations can result in staff empowerment through job enrichment, decentralisation, training, etc., or in deskilling enforced by the (re)introduction of scientific management methods.

- Logistics innovations include a re-composition of external commercial liaisons. This can affect the position of an individual enterprise in the value chain. Flows handled could be materials, transactions, information and customers. Recent logistics innovations in tourism include: Vertical linkages in the food and restaurant industries, integrated destination information systems, CRS systems and Internet marketing, and enhancement of airport hub systems.

- Institutional innovations go beyond the individual enterprise, representing collaborative and regulatory structures in small or larger communities. Institutional innovations transect public and private sectors and set out new rules of the game. Examples, with implications for tourism, include: reform of the financial incentives that restructure social or health tourism concepts; destination management systems and units that control access to vulnerable areas; and the setting up or change of credit institutions and changes in the conditions for obtaining finance

2.3. Innovation determinants and barriers towards innovating

Information is the fuel that creates new ideas. Implementing ideas, we generate innovations. As not every information is of equal value to the end-user, they need to be compiled and systemized in the form of knowledge. Knowledge can appear in many forms, but its creation is always either internal or external to the observed subject. However, not all organizations possess the required factors to produce all the needed inputs internally, thus knowledge gaps occur. External search is the mechanism by which firms seek knowledge to replenish their internal stocks (Purcell & McGrath, 2013). Nonetheless, there are other determinants, apart from knowledge, present in the form of organisational elements which can either foster or hamper the firm’s potential to innovate.

2.3.1. Knowledge

Knowledge plays a basic role in production and innovation, and any sector can be characterised by its specific knowledge base, technologies and inputs (Aldebert, 2010). It not only contains the answer on the question how to innovate, but also how to implement what's being innovated. Whilst constituting a driving force for innovation activities, it does come to one's mind to wonder where does the knowledge occur from and how is it being created and disseminated.

Brandão (2014), in her work presented 2 knowledge domains:

Explicit knowledge can be articulated and readily transmitted to others. Also known as codified knowledge. Explicit knowledge domains are:

- Science and technology, including the basic sciences, such as physics or chemistry or biology, emerging fields such as biotech or nano-sciences, and applied fields like computing and the internet. These are abundant sources of new explicit knowledge.
- Business disciplines, such as manufacturing, supply chain, finance, marketing, and communications are rich with explicit knowledge, as is knowledge pertaining to the current and observable uses that consumers make of products and services.

Tacit knowledge is difficult to transfer to another person, often because it includes unspoken or unrecognized elements or components. Tacit knowledge is hard to imitate, capture and to transmit. It is embedded in people (human capital), organisation (structural capital) and its networks (relational capital). It is related to the firm's learning ability and is acquired through "learning-by-doing", "learning-by-using" and "learning-to-learn" being, therefore, closely related to a firm's ability to innovate. Tacit knowledge domains are:

- Large scale social and economic trends that define the flowing and changing world of events, trends, beliefs, attitudes, and values, but which are often hard to track to a source, and which are highly unpredictable.
- Customers often make choices according to unspoken needs, desires, and behaviours (which are also changing), and also according to the hidden meanings that products and actions contain for them.

When discussing where the needed knowledge is created, it is falling into either of the two categories:

- Internal or in-house; e.g. R&D departments

- External; for example, universities, acquisition or imitation

R&D, standing for research and development, is representing special units within a company responsible for undertaking innovative activities with the aim of creating new or improving existing products and services. Thus, it generates an imposing amount of new explicit knowledge which is about to be disseminated, transferred and utilized. That output can be

used both internally or externally. External usages need to be regulated, therefore R&D activities are formally labelled.

The OSLO Manual (2006) states the following formal methods for intellectual property protection:

- Patents.
- Registration of design.
- Trademarks.
- Copyrights.
- Confidentiality agreements and trade secrecy.

Since R&D adheres for a heavy portion of financial investment, SME's often do not find it possible to employ in it. Yet, financial reasons are not the only barrier for scientific research employment. Teece (2010) argues that basic research usually ends up in scientific publications, so it is hard, if not impossible to secure strong intellectual property protection for scientific knowledge. It is usually taking on characteristics of public goods[2] with the rapid dissemination of scientific knowledge through journals, conferences and professional contacts.

The competitive advantages and innovativeness of firms no longer rely on internal knowledge alone but rather originate from the absorption of external knowledge. (Gebauer, Worch & Truffer, 2012 as in Hoarau, 2014). Codified knowledge transfers take place in various forms but often through collaborations and partnerships with enterprises who then, utilise the gain inputs for future product and service development. Similar, tacit knowledge can be gathered through business networks and communication channels, and other forms of weak and strong social ties. Information derived from weaker knowledge networks can compensate for an organization's relatively limited internal resources in areas such as technology, financing, and business skills (OECD 2010; as in Brooke & Joppe, 2013).

However, not all knowledge transfers are successful, resulting in new product and service creation or alteration. There are certain barriers as to why enterprises find it difficult to acquire a larger stock of new knowledge and implement it.

[2] Public good – goods where individuals cannot be effectively excluded from use and where use by one individual does not reduce availability to others

As Hjalager (2002) states the factor “time” constitutes two different types of barriers. First, knowledge has to be acquired, elaborated, implemented and confirmed before it can be fully utilised. That sequence of events takes out a certain time component, diminishing the usability of transferred information. Second, it is obvious that not all enterprises are equally good at receiving and utilising information; some are inquisitive early adopters, while others, at a later stage, copy their colleagues; finally, the conservatives accept new ideas only when they are inevitable.

Blake et al (2006) holds that a firm’s ability to use best practice techniques relies on its employees being familiar with the technology and having the capacity to translate this knowledge into improved work practices. The receiving capacities of an enterprise do not solely depend on the competence profile and skills of employees and managers, but on their number as well. Larger companies therefore, have more employees being crucial for the role of knowledge repositories. As knowledgeable assets the workface needs to engage in a knowledge-sharing process. Hence, the challenge is to identify, capture, and convert tacit knowledge from the relevant individuals into explicit knowledge that is available for the innovators and others in the organisation (Hoarau, 2014).

2.3.2. Organisational characteristics of firms

Internal company resources are the most important determinants for the positioning and competitive advantages of a company that are difficult to imitate (Gomez & Probst, 1995, as in OECD, 2006). Therefore, in order to be innovative, firms must have specific management processes and activities continuously creating an environment inside the organisation that stimulates innovation, such as the existence of an entrepreneurial leadership promoting individual creativity and innovation competencies in human resources; the acquisition of human capital, knowledge and know-how and the development of appropriate internal management and control processes in order to create competencies for innovation; human resource strategies aligned with innovation and change within organisations (Peters & Buhalis, 2008, as in Brandão, 2014).

According to OSLO Manual innovation activities are all scientific, technological, organisational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations. Some innovation activities are themselves innovative, others are not novel activities but are necessary for the implementation of innovations (OECD, 2005). It is of utmost importance to understand the internal environment of a firm as they

shape the undertaken innovation activities and distinguish one firm from another. With regard to displaying the internal elements of organizations simulating innovativeness Brandão (2014) based on the works of numerous scientific articles constituted a list of innovation determinants in tourism firms. The presented determinants are applicable not only to service firms but embody a more general approach.

Figure 2 Determinants of innovation in service firms

DETERMINANTS OF INNOVATION	
STRUCTURE	Flat, dynamic and simple structures are more favourable to innovation than complex and bureaucratic structures. Essential elements in the structure of an innovative firm: Roles: idea generators, sponsors, orchestrators; Differentiation: innovative organisation separated from operating organisation; Reservation: existence of organisational units (R&D) entirely dedicated to innovation development.
SIZE	Large companies innovate more than SMEs. Tourism SMEs lack time, money and knowledge to engage in innovative activities and are subject to imitation. In order to overcome this, tourism SMEs should engage in networks, once that this way they can gain dimension, a stronger competitive dimension and easily access resources that would otherwise be unavailable to them (e.g.: knowledge, information, etc.).
MANAGEMENT PROCESSES	Acquisition of human capital, knowledge and know-how; Development of management processes that transform knowledge and know-how into competencies for innovation; Human resource strategies consistent with innovation and organisational change; Dynamic and entrepreneurial leadership; Recognition of the high value of information leading to a constant monitoring of the environment; Development of professional management tools: human resources training plan, business plan, measurement of customer's satisfaction; Funding of innovation activities; Getting and blending ideas; Transitioning of the innovation from an 'idea' to the operating part of organisation for implementation; Managing programs to implement new products/ processes within firm's divisions; Reward system that compensates innovators.
PEOPLE/ COMPETENCIES	Entrepreneurship, creativity and innovation competencies must be present at all levels of organisation; Selection of people with innovation competencies and appropriate educational level; Training and development of employees for innovation; Assure that the firm has absorptive capacity (capacity to learn and assimilate external information and apply it by developing innovations), which will depend on human resources' educational level and training.
COOPERATION	Cooperation with other local tourism firms, with other tourism destinations, with firms from other business sectors. Cooperation towards innovation increases the strength of SMEs, reduces the uncertainty and risk, and increases competitiveness. Firms engaged in cooperation access to more and diversified knowledge and are more innovative. Regional Innovation Systems play an important role within this context.

Source: Brandão (2014)

All the above-mentioned factors, if not managed properly can easily become aspects hindering innovation. In that sense, Balazs & Szabo (2011) on the sample of 302 SME's in Hungary identified lack of financial resources (57%), adherence to the usual (41%), and knowledge shortage (20%) among the top six factors diminishing innovation activities. Figure 3. shows factors hindering innovation activities, classified by innovation typologies. Meaning that one barrier can be related to a specific type of innovation, or general to all types.

Figure 3. Factors hampering innovation activities

Relevant for:	Product innovations	Process innovations	Organisational innovations	Marketing innovations
Cost factors:				
Excessive perceived risks	*	*	*	*
Cost too high	*	*	*	*
Lack of funds within the enterprise	*	*	*	*
Lack of finance from sources outside the enterprise:				
Venture capital	*	*	*	*
Public sources of funding	*	*	*	*
Knowledge factors:				
Innovation potential (R&D, design, etc.) insufficient	*	*		*
Lack of qualified personnel:				
Within the enterprise	*	*		*
In the labour market	*	*		*
Lack of information on technology	*	*		*
Lack of information on markets	*			*
Deficiencies in the availability of external services	*	*	*	*
Difficulties in finding co-operation partners for:				
Product or process development	*	*		
Marketing partnerships				*
Organisational rigidities within the enterprise:				
Attitude of personnel towards change	*	*	*	*
Attitude of managers towards change	*	*	*	*
Managerial structure of enterprise	*	*	*	*
Inability to devote staff to innovation activity due to production requirements	*	*		
Market factors:				
Uncertain demand for innovative products or services	*			*
Potential market dominated by established enterprises	*			*
Institutional factors:				
Lack of infrastructure	*	*		*
Weakness of property rights	*			*
Legislation, regulations, standards, taxation	*	*		*
Other reasons for not innovating:				
No need to innovate due to earlier innovations	*	*	*	*
No need because of lack of demand for innovations	*			*

Source: OECD, OSLO Manual (02005)

2.4. Innovation in services

Innovation presents a key factor in all sectors of the economy, but the questions arises do all industries innovate the same and can equal patterns be implemented in manufacturing as well as in services. Gallouj & Weinstein (1997) state that analysis of innovation in service industries is difficult from two standpoints. On the one hand, innovation theory has been

developed essentially on the basis of analysis of technological innovation in manufacturing activities. On the other hand, the specific properties of service activities, and particularly the analytically "fuzzy" nature of their output, make it particularly difficult to measure them by the traditional economic methods (productivity) and to detect improvement or change (on the qualitative level).

Services are diverse in their nature, yet they share common features as opposed to manufacturing industries. Miles (2008) and Gallouj & Weinstein (1997) structure these features as follows:

- Intangibility – rather than being material products, service products are typically delivered through physical artefacts or associated with them. Generally speaking, a service is identical in substance with those who produce it and with those who consume it (it cannot, therefore, be held in stock).

- Interactivity – service processes, in many cases, require the presence and participation of the client, or customer intensity. Physical presence may be required for some kinds of transformations to a customer's state, such as transport from place to place. Customers can either be passive or actively involved in the production of the service.

- Co-terminality— service product, process, and consumption take place at the same time and place. Meaning that if a service is not consumed fully, it cannot be stored for a later use and is considered a cost.

- Information intensity — communication flows between service supplier and client, and, in data related services, it flows to and from information processing, leading to the exceptionally high levels of information technology (IT) use in services.

Generally, service innovation research can be explained using three contrasting approaches. Based on the work of Coombs and Miles (2000), Tether (2005) contemplates that the ''assimilation approach'' considers that services, and innovation in services, are fundamentally similar to manufacturing and innovation in manufacturing. Thus, services and innovation in services can be studied by using or adapting the concepts and tools developed for studying innovation in manufacturing. However, the assimilation approach is associated with the still widely held ''traditional view'' of services, which is that they are relatively unprogressive, with restricted capacities to change, especially from within. Secondly, the

‘‘demarcation approach” contends that services and their innovation activities are highly distinctive, following dynamics and displaying features that require new theories and approaches to measurement from those developed in the context of manufacturing. From the demarcation perspective, services are far from dull providers of standard activities, but are instead dynamic and fluid, constantly changing to meet customers’ requirements, and achieving this through creative combinations of ‘‘hard’’ (i.e. equipment, computer software, etc.) and ‘‘soft’’ (i.e. human skills, operating and cooperating practices, etc.) technologies. Thirdly, the ‘‘synthesis approach’’ argues that services and manufacturers do not follow entirely different approaches to innovation, but that studies of services and their innovation activities bring to the fore neglected aspects of the innovation process, which, although most prominent in services, are widely distributed throughout the economy. The aim here is to constitute an innovation framework being able to embrace all economic activities equally.

With regard to the technology sources used in services Miozzo and Soete (2001) defined 3 sub-sectors in which firms fall into:

- Supplier dominated – firms can be found mainly in personal, public and social services. Character wise, these firms are generally small, and their in-house R&D, engineering capability, and in-house software expertise are weak. They account for only a minor contribution to their process technology. Most innovations come from suppliers of equipment, information, and materials.
- Scale-Intensive Physical Networks and Information Networks – which development is closely related to the application of modern information and communication technology, initially, with the aim of reducing costs. They provide their large service customers with specialized knowledge and experience, produced internally in R&D departments, as a result of designing and building equipment for a variety of users.

- Science-Based and Specialized Suppliers Sectors – represent the emergence of an increasing number of business services closely linked to R&D, software, and the development and application of information technologies. In all these sectors, the main sources of technology are the research, development, and software activities of firms in the sector itself.

Finally, in his study of 2.404 manufacturing and service firms derived from the "Innobarometer 2002" survey results Tether (2005) found and patterned innovation characteristics of service firms as opposed to manufacturing ones.

1) With regard to innovation types, service firms are more likely to engage in organisational innovation, while manufacturers innovate on products. Larger firms are more likely to introduce product and process innovation, while small firms focus on organisational change.

2) When talking about accessing knowledge and technology sources needed to innovate service firms mostly rely on cooperation with suppliers and customers and equipment acquisition (supplier-dominated). Manufacturing firms base their knowledge steaming form in-house R&D equally as supplier and university cooperation.

3) With reference to perceived strengths originating from their innovative activities manufacturing firms specify adaptability of production to market needs. Service firms, in the other hand, favour increased skills and professionalism of the workface as well as expanded cooperation practices with suppliers and customers as positive outcomes of implementing innovation.

In the following part of the work the main focus is shifted towards innovative activities tourism firms undertake in order to boost their performance parameters. As they present service firms, all the aforementioned characteristics are applicable to them as well. Furthermore, the existing data set on tourism firm innovativeness divided by sub-sectors and country differences will be laid down.

2.4.1. Innovation in tourism

The importance of innovation for tourism is multidimensional, as is the phenomenon of tourism itself. Innovative tourist products bring a high degree of added value and by increasing the capacity for innovation, a tourism supplier can become increasingly exclusive (Gomezelj, 2016). The need to innovate is originating from the extremely rapid changes in the external environment of tourism firms. Responding efficiently to these changes firms gain a unique advantage position to clearly differentiate themselves from their competitors. Therefore, Sundbo et al. (2007), argue that tourism firms' competitiveness depends on their innovativeness in achieving lower costs and higher quality outputs that meet the demand

requirements of potential customers, and which introduce new products (e.g., improved services and products, individualisation, environmental issues and ICT interaction).

Liburd (2005) states the customer involvement in the production and delivery of the service calling for close attention to what their service expectations are, as well as when and how the service is executed. The quality of the service is intimately tied to the individuals providing and consuming the service. Tourists as customers are hence essentially crucial for tourism innovation, as their preferences represent a demand-side input which tourism firms have to continuously adapt to in order to remain competitive.

Innovation processes occur over time and are influenced by many factors. Because of this complexity, firms almost never innovate in isolation (Edquist, 1997). In practice, innovations tend to be linked and, for example, a tour company's attempt to attract higher spending tourists by offering a new product may also require innovation in how these services are produced (Hall & Williams, 2008). However, the first firm to bring a new product to market, is frequently not the firm that ultimately captures most of the economic rents associated with the innovation (Nelson & Rosenberg, 1993, as in Edquist, 1997). With that said we approach to the first tourism innovation characteristics.

Sundbo et al. (2007) refers one factor to be imitation. Service innovations are easy to imitate because they are simple and because there is no advanced technology involved. In tourism, the ease of imitation is even more pronounced as tourism innovations cannot be patented. Hence, tourism firms keep the information about innovations and are less inclined to participate in networks. What initially was seen as an investment made by the tourism business, may promptly be transformed into a high cost that is not only financial, but also with impact in market share and business image (Brandão, 2014).

As Hjalager (2002) puts it, there is little mutual trust among enterprises in tourism, who often see each other as competitors, not colleagues. Due to free-riding, collaboration is, mostly the result of intermediation by other organisations, e.g. tourist offices/boards, where activities are undertaken at ‘‘arms-length’’ from the individual proprietors. Accordingly, a key barrier to innovation development is the limited inclination of many tourism business operators to collaborate with and learn from others, both locally and more widely (Sørensen 2007).

Another characteristic is the labour force with tourism presenting a labour-intensive industry. Human capital, consisting of skills and competencies, known as “soft skills” or “know-how”

are of utmost importance in the tourism industry because of the significance of service quality provision. Here the need for employee training arises. Still, there is a strong tendency in the tourism SME sector, especially in hospitality, for owners to lack formal training or working experience specific to the industry (Williams et al. 1989, as in Hall & Williams, 2008). Another issue of great concern is the retention of skilled labour within tourism activities, as wages are often insufficiently high to prevent employees from moving to work in alternative sectors (Blake et al. 2006). Hjalager (1999) adds that due to seasonal fluctuations, large numbers of personnel are usually engaged on short-term contracts, therefore hampering the pursuit of a career in tourism.

Studies in many countries demonstrate very clearly that the tourism sector is dominated by micro and small enterprises, and that most of them are owned and operated by a single person or family (Hjalager, 2002). As innovation capacity is positively influenced by firm size, small firms' managerial systems are not adequate to support innovations and employees in small firms have low competencies (Gomezelj, 2016). Although smaller firms can be highly innovative, their small size may present an obstacle to reaching an optimum rate of innovation, and this can negatively affect the profitability of investments in R&D, market research and new product and skills development (Pikkemaat and Peters, 2005 as in Gomezelj, 2016).

When talking about knowledge acquisition in tourism firms the absorptive capability (ACAP) approach can be addressed. As presented in Hoarau's (2014) work, the concept of ACAP has the following four dimensions: (1) acquisition, (2) assimilation, (3) transformation and (4) exploitation. Acquisition capacity is a firm's ability to locate, identify, value and acquire the external knowledge that is critical to its operations. Assimilation capacity refers to a firm's capacity to absorb external knowledge or to integrating external knowledge into the organizational knowledge base.

He later, in his study of three Icelandic nature-based tourism firms, defines 9 dimensions of ACAP abilities:

1. Learning from competitors
2. Learning from and openness towards the environment
3. Learning from (multidisciplinary) cooperation
4. Learning from customers
5. Internal development of competences

6. Integration of knowledge in the existing knowledge pool
7. Human resources
8. Spreading knowledge among employees
9. Industrial benchmarking

It is evident that tourism firms do not engage in a great manner in internal creation of knowledge through R&D departments. The explanation lies in the small firm size of tourism companies, both lacking human and financial resources for in-house R&D deployment. Hence, the tourism sector is characterised as highly supplier – dominated, a breakdown of which is presented in Figure 4.

Figure 4. Tourism firm classification according Sectoral Taxonomies of Technological Activities

	SOETE AND MIOZZO (2001)	EVANGELISTA (1999)	LAURSEN AND FOSS (2003)	JONG AND MARSILI (2006)	CASTELLACCI (2008)
HOTELS	Supplier – dominated	Interactive and IT based	Specialized services	Resource–intensive	Supplier – dominated
RESTAURANTS	Supplier – dominated	n.d.	Specialized services	n.d.	Supplier – dominated
TRANSPORT AND TRAVEL SERVICES	Scale– intensive physical networks	Technology users	Scale – intensive	Supplier–dominated	Supporting infrastructure services – physical

Source: Meneses & Teixeira, 2011

Research on innovation in the hospitality and tourism industry is rapidly extending into new areas, and the existing literature has identified various areas of innovation in tourism (Hjalager, 2002). Thus, we record various research on innovation in tourism at the destination level; firm level, with division onto SME's and MNE's; and tourism sub-sectors, hotels, restaurants, transport and travel agencies, with the main focus still given to the accommodation sector. A representation of which is given below.

2.4.2. Innovation at the level of the firm

According to the OSLO Manual an innovative firm is one that has implemented an innovation during the period under review. Innovation activities vary greatly in their nature from firm to firm. Some firms engage in well-defined innovation projects, such as the development and introduction of a new product, whereas others primarily make continuous improvements to their products, processes and operations. Both types of firms can be innovative: an innovation

can consist of the implementation of a single significant change, or of a series of smaller incremental changes that together constitute a significant change (OECD, 2005).

Edquist (1997) argues that although the primary objective of capitalist firms is not innovation, innovation is often an important precondition for making a profit and therefore a large portion of the innovation processes in a capitalist market economy takes place within firms. This means that in addition to 'production' firms must be able to have a good overall innovation performance, i.e., they must be consistently able to innovate over long periods. Which means that innovating firms must have certain competencies, such as the capacity to:

- carry out a routinized search for new knowledge;
- change the search routines when necessary;
- utilize the search results;
- absorb new knowledge created elsewhere (in other firms, etc.);
- stimulate the emergence of 'unexpected' new knowledge;
- utilize unexpected new knowledge.

As well as the ability to derive new knowledge from in-house activities (learning by doing) it is important to consider a tourism firm's ability to:

- Acquire and absorb existing innovations, "internalise" knowledge that is codified and convert it into tacit know-how or routines.
- Disseminate its innovations, i.e. externalise them in the form of codified knowledge that can be more easily circulated. (OECD, 2006)

Self-evidently, innovations in individual tourism enterprises are inspired and affected by a range of external and internal factors (Hjalager, 2010). Among which, the technology – push / demand – pull aspect grasps for serious attention. Push factors are new technologies and appropriated methods that offer more efficient solutions to the production process or make the product more attractive to the customer. Pull factors are reflected in the demand from individual customers or (pressure) groups of customers. Both factors operate at the same time, and it is useful to distinguish carefully between them, particularly in the definition of policy initiatives. In his work Aldebert (2010) analysed the project databases from the various

Tourism@[3] events between 2003 and 2007 and came to following conclusions about innovation activities in tourism firms:

- 70.7% of innovation in tourism is product or service innovation subdivided into:
    - Market innovation (psm) corresponds to major product innovation, that is new to both the firm and the market (14.9%)
    - Firm innovation (psf) occurs when firms introduce products or services that are new to the firm but already exist in the market (28.2%)
    - Application innovation (psaf) is a minor innovation. It consists of improvements (in terms of performance or cost) to a simple product, through the use of higher performance components or materials, or a complex product through the introduction of changes to one of the integrated technical subsystems (27.6%)
- the majority of innovations in the tourism industry are incremental

Sundbo et al. (2007) in his research that combined 666 Spanish and 186 Danish tourism firms in all tourism sectors – accommodation, restaurants, travel agencies, attractions, transport companies, etc., however, with an over-sample of hotels found the following innovation patterns. First of all, a taxonomy of tourism firms was created as presented in Figure 5.

Figure 5. Three organisational forms of tourism firms

A. Tourism corporation	Large and complex company with several branches or tightly-coupled chains. May cover several industries.
B. Tourism enterprise	Medium-sized, independent and formally organized enterprise. Might be member of a loosely-coupled chain.
C. Tourism shop	Small. Owned and run by an individual person or family. Business life is for the owner mixed with family life.
C.a. Entrepreneurial	Business development has precedence.
C.b. Artisanal	Conservation of family patterns has precedence over business life-style development.

Source: Sundo et al. (2007)

[3] Tourism@ Awards - an annual event which acts as a temporary tourism cluster and facilitates the emergence of information related to innovation in tourism.

- Larger firms (in terms of number of employees or number of beds) innovate more, meaning that tourism enterprises innovate more than tourism shops, and tourism corporations innovate more than tourism enterprises

- Among small firms (tourism shops) entrepreneurial firms innovate more than artisanal firms

- Firms that are part of corporations or chains innovate more than firms that are part of a franchise or no cooperation at all

- Spanish data showed hotels as the most innovative, followed by attractions and restaurants, least innovative were travel agencies and car rental firms

- Among Danish tourism firms tour operators and travel agencies were the most innovative, while hotels and restaurants were found to be the least innovative

Jacob et al. (2003) in a pilot study of the tourism industry on the Balearic Island of Spain, which encompassed all tourism sub-sectors firms found an average of 7,10 innovations introduced by companies during the period under consideration, namely in the last 5 years. Thus, the surveyed companies presented a highly innovative data set. Moreover, the analysis showed that:

- Independent firms tend to be less innovative (5,73 innovations) then firms belonging to corporations (8,78 innovations) and MNE's are more innovative – 7,83, than firms operating on the local market (7,11 innovations)

- Once again size is an important determinant of innovation, with SME's (3,67 innovations) as opposed to large companies with more than 50 employees introducing on average 10 innovations in 5 years

- The lodging and accommodation sector tends to be the most, and leisure and recreation least innovative tourism sector. While process innovation prevails, followed by organisational, product and marketing being the least common, it is due to the interconnectivity of service operations that 95% of the firms implemented more than one type of innovation in the last 5 years

- Lastly, technological innovations (53,5%) are only slightly more frequent than non – technological ones (46,5%) in all sub-sectors except accommodation, where 81,6% present ICT related innovations

Finally, Pivčević and Praničević (2012) measured innovativeness on a sample of 68 Croatian hotels. The findings of the research are that the sampled hotels introduced an average of 3,31 innovations (both incremental or radical) during the specified research time frame and present those moderately innovative hotels. Among those, two clusters were identified, highly innovative (45 hotels) with 3,74 innovations, and low-innovative (16 hotels) with 2,26 innovations. With regard to innovation type, the analysis concluded that hotels in Croatia mostly introduced product and marketing innovation, followed by process and organisational innovations being on the backend. Dealing with the imitation effect of service innovation the data has shown that 34.48% hotels have introduced new or significantly improved services new to the market they operate in, while 65.52% hotels have introduced novelties new for their hotel, but not for the market. More than two thirds of the questioned hotels fall in the category of supplier – dominated units which use external knowledge and technology as an input for innovation. The rest of 25% is actively engaged in the creation of in-house technological systems. Finally, the generally accepted statement which claims a positive link between innovativeness rates and firm size has not, in the case of Croatian hotels, proven to be justified.

Even some common conclusions can be drawn out from the presented research results it is plausible to form and justify tourism innovation patterns on a global scale. As seen, not all data adds up to the same outcome, and while some patterns are repeatedly evident in one country or sub-sector other researchers may prove the direct opposite. By broadening the research pool and diminishing the gaps it is possible to conclude basic tendencies concerning tourism innovation activities in a subject specific manner.

3. INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs)

Information and Communication Technology (ICT) which, as a term, emerged in the 1980es, encompasses software and technical equipment, as well as communication technologies which enable users to manipulate, send, receive and store information. In a more subject specific manner Buhalis (2003) defines ICTs as the entire range of electronic tools, which facilitate the operational and strategic management of organisations by enabling them to manage their information, functions and processes as well as to communicate interactively with their stakeholders for achieving their mission and objectives.

By information technology (IT) we refer to the interconnected set of technological and organizational innovations in electronic computers, software engineering, control systems, integrated circuits, and telecommunications, that have made it possible to collect, generate, analyse, and diffuse large quantities of information at a minimal cost (Miozo & Soete, 2001).

While IT focuses primarily on the processing and transferring of information, ICT focuses on communication technology. This includes Internet, wireless networks, mobile devices (telephones, tablets, etc.) and other communication media enabling information to be present online. Consequently, this has led to the creation of a virtual marketplace for conducting eBusiness where the sold products steam from a wide array of providers, making selection and availability higher than in vendor-specific stores. Fostering competitiveness and differentiation, ICT capabilities created an environment in which companies not being present online cease to exist in the market game.

In the following paragraphs a brief overlook ICT development will be laid down, as well as most important ICT innovations presented. As this work focusses primarily on ICT innovations deployed in the tourism sector more attention will be aimed at ICT applications which use is widespread in travel agencies.

3.1. ICT deployment in the tourism sector

Information technology and tourism are two of the most dynamic industries in the world (Liburd, 2005). ICTs have been transforming tourism globally (Buhalis & O'Connor, 2005) and have undoubtedly become one of the most important elements of the tourism industry as in few other economic activities are the generation, gathering, processing, application and communication of information as important for day-to-day operations (Buhalis, 2000).

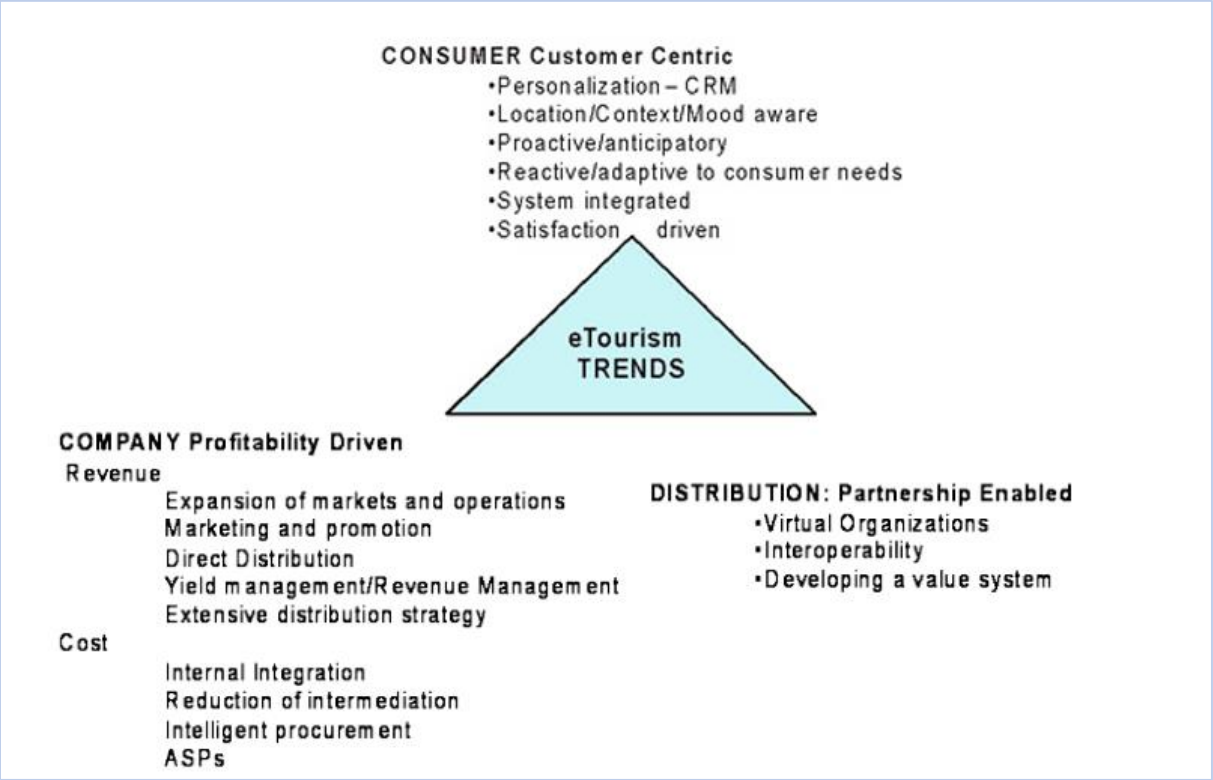
Hoffman (1994 and 1995 as in Buhalis, 2000) suggests that several major factors make ICTs an integral part of the tourism industry, namely:

- economic necessity, as global competition requires maximum efficiency;
- rapid advancements in technology;
- improvements in ITs' price/ performance ratios which yield better productivity for capital employed in ITs; and finally
- rising consumer expectations, as consumers become used to advanced products and expect further improvements in customer service, personalization and interaction.

The energetic growth and development of the industry are perhaps only mirrored by the growth of ICTs. Constant innovation in applications of hardware, software, and network developments means that only dynamic organisations, which can assess the requirements of their stakeholders and respond efficiently and effectively, will be able to outperform their competitors and maintain their long-term prosperity. Rapid technological development paradoxically means that the more powerful and complex the ICTs get, the more affordable and user-friendly they become, enabling more people and organisations to take advantage (Buhalis & Law, 2008).

Buhalis and O'Connor (2005) stress out the value of e-tourism strategies travel operators will engage in the future. Arguing that, tactically, e-tourism enables organizations to manage their operations and undertake e-commerce. While strategically, e-tourism revolutionizes business processes, the entire value chain, as well as strategic relationships with stakeholders. ICT developments generate both opportunities and challenges for tourism organizations and the most significant emerging trends can be examined as depicted in Figure 6.

Figure 6. ICT enabled e-tourism trends



Source: Buhalis & O'Connor (2005)

More and more technologies are directed to the end-customer, emphasising the diffusion of knowledge from professionals to end users (Aldebert, 2010). ICTs place users in the middle of its functionality and product delivery. The Internet empowers such 'new' tourists with more knowledge and encourages them to seek exceptional value for money and time (Buhalis & O'Connor, 2005). The key to success lies in the quick identification of consumer needs and in reaching potential clients with comprehensive, personalised and up-to-date products and services that satisfy those needs. Gradually new, experienced, sophisticated, and demanding travellers require interacting with suppliers to satisfy their own specific needs and wishes (Buhalis & Law, 2008).

The tourism industry was among the early adopters of ICT, such as the Computer Reservation System of the early 1950s and the adoption of Global Distribution Systems in the late 1980s. Tourism is a very specific sector that involves very heterogeneous and evolving knowledge bases and technologies, and even more heterogeneous and dispersed firms, from multinationals to very small firms, and from high tech to low-tech (Aldebert et al., 2010). However, after several decades of ICT adoption, the degree of adoption as well as use of ICT among enterprises related to travel and tourism (T&T) has been quite uneven (Dhaigude et al.

2016). There are multiple explanations for this phenomenon. First of all, the industry is categorised by a vast number of SMTE's which are still reluctant to implementing technologies into their workspaces. Reasons vary from financial to operational issues and low rates of perceived usefulness that technological innovations bring. Secondary, the human resources employed in tourism can also pose as impeding factors. As technological progress automates work tasks, the need for low skilled employees adding little value to product creation significantly reduces. What is more, the high rates of fluctuation due to seasonality present an obstacle for engaging in formal forms of training and work upskilling.

Nonetheless, a firm's ability to use best practice techniques relies on its employees being familiar with the technology and having the capacity to translate this knowledge into improved work practices (Blake et al. 2006). Still in the tourism and hospitality industry, many managers generally do not have a clear understanding of how advanced IT can improve their business performance, and thus cannot communicate well with technical experts. Limited technical IT knowledge, however, is not a sufficient reason for lagging behind (Law & Buhalis, 2009).

ICT employment in travel agencies has occurred in a couple of stages. Nevertheless, agencies were not much behind tour operators when implementing new technologies. The first stages were defined by using distribution systems like CRS or more advanced GDS which shortened their daily operations increasingly since obtaining information about flights, accommodation and transport facilities from their terminals and making reservations of such could be done within minutes. The third generation introduced the term of the online travel agency (OTA). OTA's operations were based on distributing their products and services globally using multimedia interfaces in the form of web sites, social media presence and mobile applications.

The type of a travel agency and its main clientele determine the type of technology it uses (Buhalis, 2000). These technologies are both related to internal and external operations. Inside the organisation ICT serves to automate work tasks, reducing thus the needed time for daily operations and indirectly cutting related operational costs, integrating front and back-office functions. Furthermore, ICT supports managerial decision making and improves strategic management inside the firm, as well as simplifies staff training and monitoring, hence fostering a fitter organisational culture. When looking towards the demand side ICTs serve as a vital tool for obtaining customer satisfaction and advancing the competitive position in the virtual marketplace.

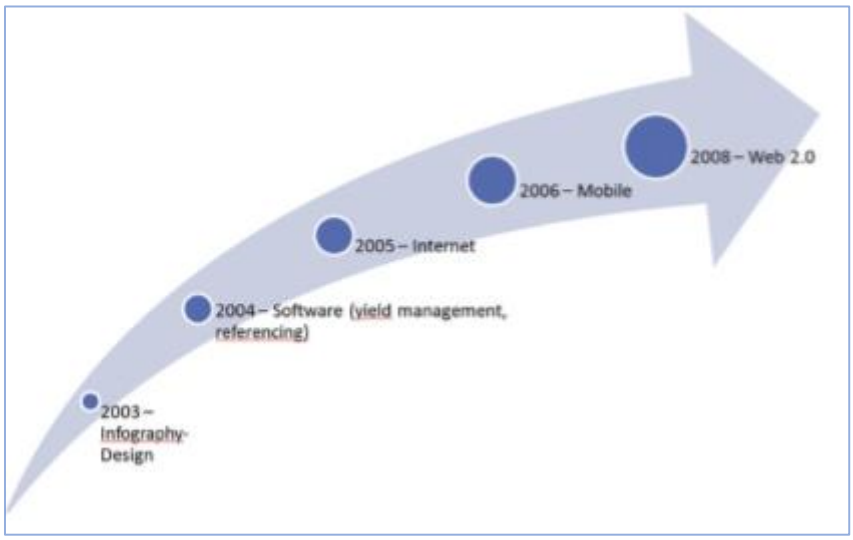
Evidently, for a brief moment, ICTs and the emergence of the Internet endangered the traditional role of the travel agencies. As the Internet revolutionized the distribution channels and made them more available, this in their turn meant that both professionals and consumers now had access to the same tools in information retrieval. Consumers became more technologically literate and with the emerge of new players like OTAs on the marketplace were able to bypass intermediaries and paying for their commissions. Consumers also became more empowered to bundle their itineraries and purchase the associated products alone. In that manner, travel agencies had to add more value to the products and services they offered in order to maintain their competitive position. ICTs altered the rigid distributional patterns where establishing a physical contact was needed in order to complete the purchase process and lead to a new business dimension characterized by an electronic marketspace.

On the other hand, too many choices available to the consumer make it very time demanding to decide upon the best and most moneywise purchasing solution. With more new entrants on the marketplace the issues of online security and cybercrime arise, which is especially evident concerning payments carried out over the Internet. Therefor many tourists are still resistant to conduct payments online and use the Internet solely as a tool to inform themselves about all the possible options. Concluding that ICTs, especially the Internet, will not cause the complete vanishing of the travel agent and its functions. Instead, innovative travel agencies who can keep up with the pace of ICT innovation and successfully implement it in their working environment will be the ones on the top of the competitive chain.

3.2. Review of relevant ICTs applications

From the first professionally oriented technologies to today's more advanced end-consumer applications ICTs have been constantly changing and improving upon their features. The Internet has had a major impact on tourism both for providers and consumers (Standing, 2014). The diffusion and adoption of emerging technologies and their rapid evolution towards final users becomes even more evident today (Aldebert et al, 2010). The rapid change in the ICT evolution in the last decade can be seen as presented in Figure 7.

Figure 7. Main technologies according to years



Source: Aldebert et al. (2010)

Perhaps the biggest shift in the last couple of decades has been the one from the Web 1.0 towards Web 2.0 and the era of social networking. Web 2.0 presents the second stage of the Internet evolution, characterized by a transaction from static into dynamic web pages, where the input originating from the end user is evident in the form of blogs, videos, chat rooms, podcasts and similar, as well as the growth of social media present.

Since there is a vast number of Internet communication technologies implemented nowadays it would far exceed the scope of this work to mention all of them respectively, thus the following chapters only cover the ones mostly used in travel agency's daily operations. After thorough research a list of 18 ICT innovations clustered in 3 groups (eMarketing, mobile technologies and software support applications) of greatest importance to the working environment were included in the survey and will be looked upon.

3.2.1. eMarketing solutions for travel agencies

The Internet has had a major impact on tourism both for providers and consumers (Standing, 2014). It has transformed the traditional linear distribution channels into a diverse virtual marketplace of many choices. Marketing efforts are being undertaken in order to distinguish a firm's offer from their competitors. Not having a comprehensive online presence or failing to adopt a multichannel strategy effectively, can mean invisibility in the marketplace and/or strategic disadvantages (Buhalis & Kaladis, 2015).

Focusing on online presence the first and most direct communication point between a travel agency and its audience is its web site. However, web sites far exceed the mere function of a distribution channel, but present, to some extent, a business platform in itself. Successful websites must achieve a high hit and conversion rate, which is directly affected by consumer page clicking behaviour, content, search engine optimization, and web page management (Murphy, Hofacker, & Racine, 2006 as in Law & Buhalis, 2009). Web site development and upkeep are costly items on the expenditure side of the budget, still travel agencies engage in their creation as they are fully customized containing their unique selling points and personal touch. What is more, being a direct distribution channel, the web site enables its owner to retain most of the sales price, as they are no excess fee losses towards intermediary web pages for online marketing. Such final product or service is as well, in theory, cheaper for the end buyer and therefore the first stop towards realising his purchasing intents.

The emergence of social media was seen as a major breakthrough in the eMarketing area as it allowed direct communications with potential and future customers on social media platforms. The reason for its mass popularization lies in the fact that tourists, before, during and after undertaking their travels like to share their experiences on their social media accounts. By doing so they share relevant information in the form of pictures, video clips and written reviews which can be made available to the mass audience and serve as performance feedback to the firm. A firm's job is to use that gained intel and send out personalized adds created for specific customer segments to target their needs and preferences. SM platforms host over two billion users monthly (Statistic Brain 2014), who are actively participating in content creation in communities, blogs, social networking, wikis (Buhalis & Mamalakis, 2015). Being present on social media is a relatively inexpensive way for travel agencies to boost their marketing strategy as admission to social media platforms is free. However, not every social media presence will bring forth an instant success. It is important to stress out the relevance of continuous feed update and posting of accurate and up to date information. Moreover, not all social media have the same impact range on different market segments as some user for example prefer to read and are present on blogs rather than other social media accounts. Therefore, it's optimal to use a targeted segment of media platforms in order to boost visibility and generate sale results.

3.2.2. Mobile technologies

Today mobile and wireless technologies are one of the emerging fields of ICT development. Wireless presents technologies in which electromagnetic waves (instead of a wire) carry a signal from the sender to receiver point. Wireless applications are ever present today for smartphones, global positioning systems, and other devices. Law and Buhalis (2008) argued that General Packet Radio Service (GPRS) and Universal Mobile Telecommunications System (UMTS) gradually introduced third generation (3G) mobile phones and services, empowering the communication of multimedia information on interactive mobile devices, enabling travellers to retrieve travel-related information without any time and geographic constraints. Ten years after their findings the world is heading towards its fifth generation of mobile networks (5G wireless access) and the ultimate connectivity where not only smartphones and computers will be wirelessly connected, but so will cars, TV sets, and other electronical equipment.

On average every person possesses a mobile device, and soon enough the mobile to person ratio will exceed 1:1. Since they are multifunctional and easy to carry, mobile phones are the preferred gadgets with which the tourists search, plan and make travel related decisions when and where they want. Their relevance is even of higher value once the traveller is already in the destination. Service quality in the use of mobile services in destination can be perceived through both technical (network quality and data services) and functional attributes (Kumar & Lim, 2008). Therefore, technological advances in mobile devices added a new dimension, the m-commerce (standing for mobile commerce), to the standard e-commerce.

When discussing mobile technologies, the term mobile application should be separated from the mobile version of a web page. A mobile web page is a mere optimisation of a standard web site to fit the dimensions of the mobile screen. Pages that are not optimized to the narrow mobile screens are bulky, with text usually overlapping which makes is hard to navigate them. Also, to access a mobile web page the devices needs to be constantly online.

On the other hand, mobile applications are specially developed to meet the needs of the consumers. Mobile apps enable access to information more or less anytime and anywhere, meaning that more apps are created to also work offline, based on preloaded data. In their role as a personal assistant, they can easily take into account user preferences and even user location in order to filter relevant information and avoid information overload, which is

especially important in the on-trip phase (Fuchs et al, 2010). The majority of mobile applications in the tourism sector are used to obtain information about tourist attractions, events, lodging and transport facilities, food and beverage services as well as reservation and purchase of aforementioned. In travel agencies mobile apps can be used for inventory management and sales.

3.2.3. Software support applications

Support applications in travel agencies have a core function as they enable efficient management of everyday work tasks in a less time consuming manner. Nowadays, basically every travel agency operates some kind of a back- or front-office software as a support system for everyday tasks, like reservation management, customer support, database collection, yield management, administration functions and similar. These systems, however, do not need to be separate software applications since the goal is to integrate more functions into a single powerful software tool which would also be cost efficient.

Channel manager can best be described as a management system allowing bulk information input from a central location (usually an availability calendar) to all connected sale channels. CM is currently connected to the lodging industry as it is fully optimized for hotels, tourist resorts and travel agencies selling accommodation units. These subjects are known to be dependent on advertising their units on various sale channels to boost their occupancy rates. Managing different sale channels, especially the ones only submitting real-time reservations, can and often does lead to reservation overlapping also known by the term overbooking. The CM operates on two bases. The one-way connection is implemented through an iCalendar file format. Being one-way, means it only carries information from the sender to receiver (sale channel). The two-way connection present at an increasing number of travel fare aggregators like Booking.com, Expedia, Orbitz.com, etc., poses as both sender and receiver of information. As example, an incoming reservation from Booking.com automatically closes availability for the same period and unit on Expedia or Airbnb, operating an iCal connection. While a reservation undergone on Airbnb will not, without human interference inside the CM, close availability on Booking.com. Inventory information being sent through a CM onto distribution channels include: rates, availability, release period, reservation restrictions and serves as an excellent means for inventory bulk editing.

Booking Engine also known as Internet Booking Engine (IBE) is directly connected to a travel agency’s web site. This software allows for the product or service to be booked and

purchased directly on the online distribution page. Like many other ICT tools, BE has its infancies in the airline industry, and later developed its application to other service sectors, including travel agencies. Liang and Lim (2011, as in Law et al., 2014) analyse consumer preferences in online buying and suggest that consumers generally accept online purchasing and have a higher intention to purchase online when web sites offer higher levels of control. As such payment gateways serve for the safe authorization and processing of card purchases, offering fast, secure and easy real-time payment transactions from both debit and credit cards, with PayPal being one of the most widespread payment gateway tools today. Transaction security, navigation functionality and cost-effectiveness positively impact trust, which, in turn, positively influences intention to repurchase via online channels (Kim et al. 2013, as in Law et al., 2014). Travel agencies as such have to actively upgrade their online safety standards regarding online transactions in order to retain their customers and avoid cybercrimes.

Finally, software support emerges in the form of eLearning which presents any form of online facilitated learning. With the rapid advancements in ICTs constant improvements of the workforce skills have to be obtained. The Internet offers access to resources and knowledge otherwise inaccessible to a single firm, meaning greater flexibility in terms of time and place delivery. Also, participation in virtual learning environments fosters a wide range of upskilling opportunities and knowledge sharing. Buhalis & Law (2008) hold eLearning being accepted as a means of increasing employees skills and knowledge and being more and more integrated into their training strategy along with other methods of delivering training.

4. ANALYSIS AND EVALUATION OF THE FINDINGS

For the purposes of testing the four underlined research hypothesis an analysis has been carried out to investigate the ICT innovation usage and their implications on travel agencies performance in Croatia. The research objective was to collect data determining the internal characteristics of travel agencies, their ICT usage rates and their attitudes and viewpoints towards implementations of such.

4.1. Research methodology

The research instrument used to collect the data was a structured survey questioner first created in the form of a Word document and later transferred into Google Forms – a free tool to create and analyse surveys. The questions were written and sent on Croatian, but for the purposes of this study translated into English. Both versions of the survey are enclosed in the appendix. It consisted of 20 close-ended, multiple choice and rating scale questions, divided into 3 parts, general information, ICT usage and innovation propensity. For the rating scale questions, a Likert 1 to 5/1 to 10 scales were used.

For the aim of this study a database of Croatian travel agencies was created in an Excel spreadsheet. The contact information for the database were collected from the Croatian National Tourism Board web site which at the time of creation was counting 1094 travel agencies (https://croatia.hr/hr-HR/Putovanje-Hrvatskom/Turisticke-agencije, accessed 15.02.2018.). However, as the primary form of contact was per electronic mail addresses, agencies that did not have a contact e-mail enclosed, or where branch agency offices were not included. Thus, the first version of the database counted 886 travel agencies.

The questionnaire was sent out using the YAMM mail merge tool for Gmail, enabling to send a quote of 250 mails per day. The collection period for the responses was in total 4 weeks, starting with 30.04.2018. and ending on 26.05.2018. After the first working week and the send out to all of the 866 addresses, revision to the database had to be done with the bounce rate being too high. The available email domains were no longer in use, the mailboxes full and unable to receive more mails, and part of the agencies where not even operating any longer, or if so, not in the field of tourism. The updated database therefore had a total number of 545 agencies with valid e-mail addresses. YAMM tracking report showed that after the second send out the opening percent of the sent e-mails was 67%. Out of these 365 agencies, a total of 58 responses were collected, partially by e-mail, partially over phone call. These

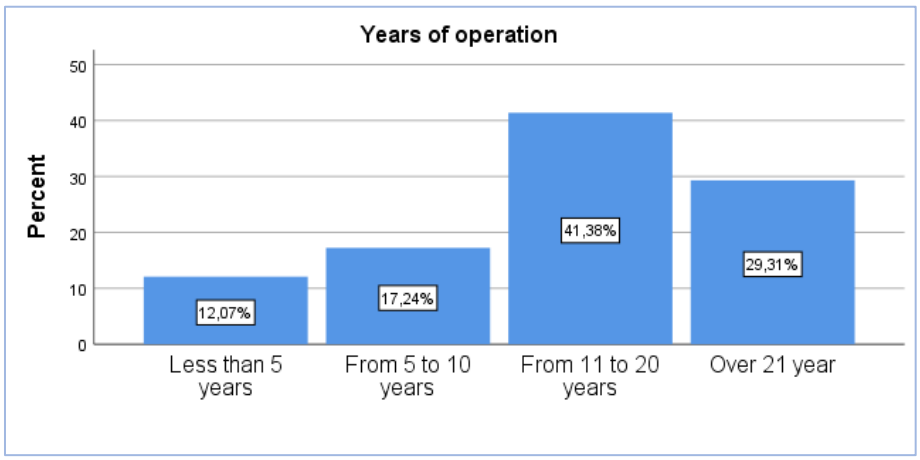
present a sample percentage of 15,89% travel agencies. The response came from 11 different Croatian counties out of 17 that have registered travel agencies operating. The main number of responses originated from the Splitsko-dalmatinska, Primorsko-goranska and Zadarska county which, accordingly, had the highest numbers of recorded agencies running business.

Research results are presented in the following paragraphs in the form of descriptive data analysis, while statistical tests were used for examining research hypothesis. The program used for the statistical analysis was IBM SPSS Statistics 24.

4.2. Descriptive data analysis

The first graphical representation in the form of a bar chart displays Croatian travel agencies in accordance with their market age. The sample is characterized by agencies that are operating on the market for more than 10 years already (70,69%). Agencies that started running business in the year of 2008. and ahead present less than a third of the sampling.

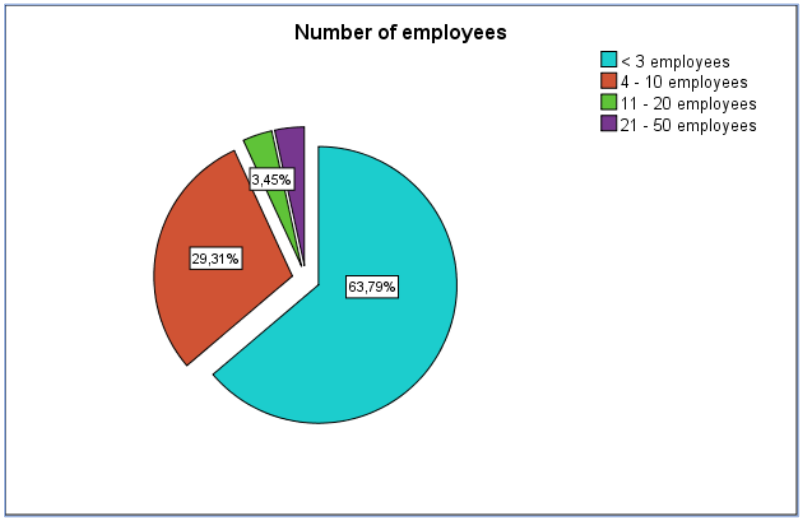
Figure 8. Travel agencies according to years of operation



Source: author's own construction

Figure 9. shows full-time employment in travel agencies. The T&T industry is identified by a vast number of SME's which the data is indicating in the exact same matter. Almost two thirds of agencies employ 3 and less workers, with the most common answer being 2 full time employees per travel agency. While there is a bigger sample of what is perceived to be a medium travel agency (4 – 10 workers) only 4 agencies in total having over 10 employees (6,90%) took part in the survey.

Figure 9. Travel agencies according to number of full-time employees



Source: author's own construction

Table 1. is directly connected to questions 3. and 4. in the survey. From the cross tab it is evident that out of the total number of employees in 24 agencies less than 50% have a tertiary education (bachelor, master or PhD) while in the rest of the 34 agencies more than 50% have such education. Out of these 34 agencies only 16 have employees with a tertiary education in the field of tourism. That is to say, only in 27% of all agencies the majority of the workface has a tertiary degree in the field of tourism.

Table 1. Educational level of employees in travel agencies

Percentage of tertiary education * Percentage of tertiary T&H education Crosstabulation

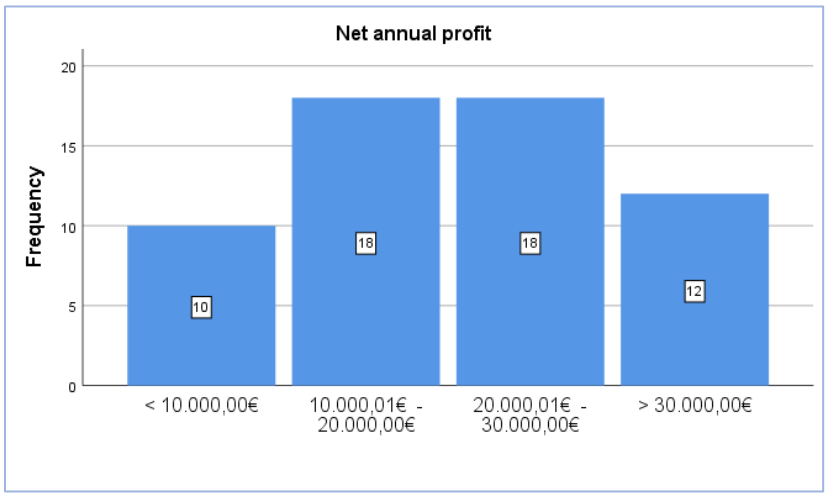
Count

		Percentage of tertiary T&H education				
		0% - 25%	26% - 50%	51% - 75%	76% - 100%	Total
Percentage of tertiary education	0% - 25%	3	1	0	0	4
	26% - 50%	7	13	0	0	20
	51% - 75%	4	3	2	1	10
	76% - 100%	7	4	0	13	24
Total		21	21	2	14	58

Source: author's own construction

When questioning about the average profit levels the business generates annually 48 responses (82,75%) said to produce over 10.000,00€, while 12 agencies (20,68%) create a profit over 30.000,00€.

Figure 10. Travel agencies according to profit levels



Source: author's own construction

Table 2. presents the business segments in which the agency's primary operate. Even though a great part of firms operates in more than one segment, for the purposes of this study they were asked to limit themselves on the segment generating most of their income. Most of the agencies operate in the field of accommodation mediation (29 firms), followed by organisation of excursions and package deals (25 firms). The sample contained also 3 charter firms and 1 agency specialised for transport.

The last question in the general part was tackling the legal status, according to which 56 travel agencies (96,6%) run independent businesses, while 2 agencies operate as part of a corporation, tour operator or travel agency chain.

Table 2. Primary business segment of operation

Business segment					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Charter	3	5,2	5,2	5,2
	Mediation in booking accommodation	29	50,0	50,0	55,2
	Organizing excursions and package deals	25	43,1	43,1	98,3
	Transport	1	1,7	1,7	100,0
	Total	58	100,0	100,0	

Source: author's own construction

In the next set of questions ICT usage was examined. Table 3. shows the importance of the Internet for sales generation. The data shows that one third (32,8%) generate less than half of their sales over online channels. They still rely on traditional distribution channels alike tour operators, telephone and walk-in customers. The majority (67,2%), however, mainly distributes over the Internet, with 31% of all travel agencies generating more than 90% of their sales through online distribution channels.

Table 3. Approximate percentage of online sales

Percentage of online reservations					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 30%	11	19,0	19,0	19,0
	31% - 50%	8	13,8	13,8	32,8
	51% - 70%	10	17,2	17,2	50,0
	71% - 90%	11	19,0	19,0	69,0
	> 90%	18	31,0	31,0	100,0
	Total	58	100,0	100,0	

Source: author's own construction

Question 9. served to, before presenting all the ICT applications used in travel agencies, estimate perceived intensity and variety of use in their daily operations. On a scale from 1 to 10 the results are shown in Table 4. It is interesting that only 3 agencies perceived themselves to be low ICT oriented on a daily basis. 67,2% see themselves as moderately ICT oriented (answers 5,6 and 7), while 16 agencies (27,6%) identify as highly ICT diverse.

Table 4. Estimate of intensity and variety of daily ICT usage

Perceived ICT usage variety					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	3	5,2	5,2	5,2
	5	9	15,5	15,5	20,7
	6	12	20,7	20,7	41,4
	7	18	31,0	31,0	72,4
	8	8	13,8	13,8	86,2
	9	6	10,3	10,3	96,6
	10	2	3,4	3,4	100,0
	Total	58	100,0	100,0	

Source: author's own construction

Onwards, question 10. displayed the list of most relevant ICT innovations for the business operation of travel agencies. Agencies where asked to indicate when exactly, if used, the innovation was being implemented in the common work routine. The results are seen in Table

Table 5. ICT innovation implementation rate and variety

	Use from the start	Implemented in last 5 years	Implemented last year	We do not use
	Count	Count	Count	Count
e-mail	57	1	0	0
Newsletter	5	17	3	33
Own website	44	12	1	1
Booking Engine	9	13	4	32
Intermediary web pages	23	11	2	22
Self-developed mobile applications	1	2	3	52
Existing mobile applications	4	3	8	43
Global distribution systems	7	4	1	46
Back Office software	14	11	1	32
Front Office software	15	13	2	28
Chanel manager	3	6	4	45
Payment gateways	7	8	5	38
Cloud systems	12	22	8	16
Social media	19	27	7	5
Google AdWords	8	11	5	34
eBrochures, pop-ups, web banners, etc.	6	6	7	39
Multimedia content and 3D virtual tours	3	3	4	48
eLearning	3	4	3	48

Source: author's own construction

5. The most used ICT tools, with exclusion of the e-mail, are the travel agencies own Web site and social media, with only one agency not having an online Web page, and 5 firms not being present on social media accounts. The least used tools are self-developed mobile applications, multimedia and 3D content as well as eLearning, without surprise, since these present high-end technologies. Global distribution systems are also becoming less significant as firms have other distribution channels available for information searching. However, the low rate of agencies having implemented a Booking Engine (45%) on their existing web pages is far more disappointing, even though in the last 5 years that percentage increased more than half.

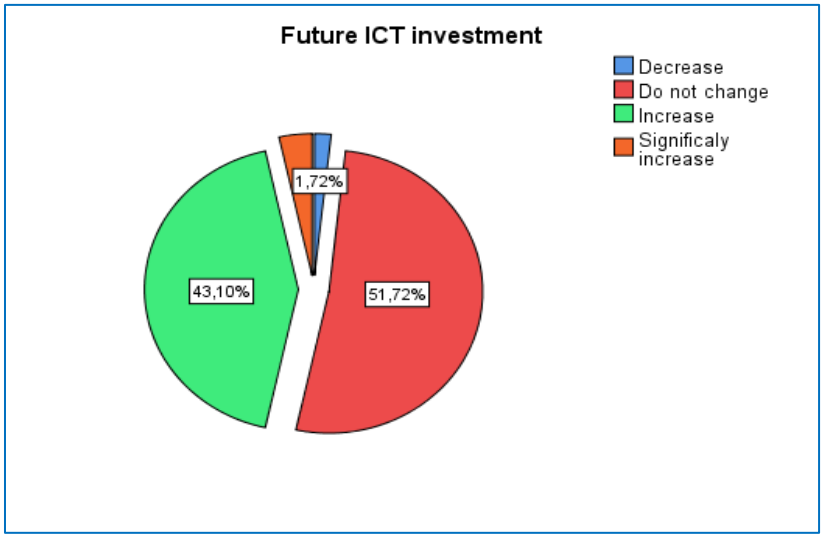
We can see that the implementation rate for all ICT innovations in the last 5 years, except for own and intermediary Web pages, has doubled. The most significant increase was the introduction of the newsletter. In the last year, agencies introduced mainly cloud systems for data storage and existing mobile applications fostering the trend of wireless technologies. In total, a mean of 8,33 ICT innovations per agency are implemented (out of 18 possible) being thus low to medium innovative firms.

Table 6. Investment in last 6 months

	Yes		No	
	Count	Row N %	Count	Row N %
New hardware	35	60,3%	23	39,7%
New software	27	46,6%	31	53,4%
Employee education	13	22,4%	45	77,6%

Source: author's own construction

Figure 11. Future ICT investment rate in travel agencies



Source: author's own construction

Table 6. shows the financial investment rate in the last 6 months. From a total of 58 agencies, 43,1% engaged in financial investment regarding ICT tools and workforce upskilling, while 56,9% did not invest money for the same. The biggest percentage of agencies, if invested, acquired new and more sophisticated hardware (60,3%) in the form of laptops, mobile devices and alike. Not surprisingly, only 22,4% of agencies spent financial resources in employee education for operating those new and improved ICT tools.

Table 7. The average means on respondents' satisfaction of ICT implementation benefits

Descriptive Statistics		
	N	Mean
ICT investment has increased the competitiveness of your agency	58	3,84
The use of ICT has enabled your employees to work more efficiently	58	3,90
ICT has enhanced the organizational culture of your business	58	3,90
ICT innovations have made it easier to track employee performance and progress in your agency	58	3,40
The use of ICT innovation has made it easier to adjust to the wishes and needs of your customers	58	3,79
The use of ICT has increased the satisfaction of your customers and reduced the number of complaints on your products and services	58	3,97
Valid N (listwise)	58	

Source: author's own construction

Following question asked travel agencies about their planned future ICT investment, responses to which can be seen in Figure 11. The biggest group, presenting more than a half of all firms, decided not to change their current financial investments in the years to come. 43,1% of all respondents stated to somewhat increase their spending related to ICT tools in the future, while one agency said to increase their investment significantly. Only one respondent (1,75%) indicated to decrease any new ICT related investment.

Next up was a set of statements regarding organisational performance and customer relationship management. A Likert scale from 1 to 5 was used to measure satisfaction rates separately for each statement. The average means are displayed in Table 7. All participants stated medium to high satisfaction rates to all of the 6 statements, especially stressing how ICTs increased customer satisfaction and reduced the number of issued complaints.

Table 8. shows the profit growth in 2017. compared to year 2016. caused by the implementation of new ICT innovations. Most agencies had recorded a growth between 5 and 40%. The data also shows that while 10,3% of firms outperformed themselves, 4 of them were unable to indicate if there even was a profit growth, and if so, how big.

Table 9. follows the same logic as the previous one while regarding market share growth. As market share is more complex to measure than profit increase, the number of missing values grew onto 6 agencies not providing answers to this question. Here the majority of agencies

(77,6%) recorded increases in market share from 0 – 20%, while only 12% of respondents said to evidence a growth over 20%.

Table 8. Profit growth in travel agencies for the year 2017.

Growth of profit in 2017 compared to 2016					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-	4	6,9	6,9	6,9
	< 5%	3	5,2	5,2	12,1
	5% - 20%	30	51,7	51,7	63,8
	21% - 40%	15	25,9	25,9	89,7
	> 40%	6	10,3	10,3	100,0
	Total	58	100,0	100,0	

Source: author's own construction

When asked about their satisfaction ICT innovation implementation brought to the aforementioned growths, 46 agencies (79,3%) claimed to be fully satisfied, while 20,7% said to have expected a higher profit growth rate in 2017., as opposed to 2016. Further, 75,9% of agencies where content with the recorded market share increase, while the remaining quarter shared the opposite opinion.

Table 9. Market share growth in travel agencies for the year 2017.

Growth of market share in 2017 compared to 2016					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-	6	10,3	10,3	10,3
	< 5%	23	39,7	39,7	50,0
	5% - 20%	22	37,9	37,9	87,9
	21% - 40%	6	10,3	10,3	98,2
	> 40%	1	1,7	1,7	100,0
	Total	58	100,0	100,0	

Source: author's own construction

The last set of questions was dealing with ICT innovation propensity. The first one was referring to technology acquiring. Agencies where asked to state a maximum of 2 answers (out of 5 provided) which highlighted in the greatest manner the way they obtained ICT tools before putting them into operation. Respondents from this survey where actively innovating

new ICT tools, either in their own R&D departments (8,8%) or in partnership with a third party (16,7%), creating a total of 25,5% of observed cases. Since an innovation does not need to be brand new but is also considered an improvement of existing features the 28,9% of travel agencies that bought the ICT tools externally but personalized them before implementation are also recognized as innovators. Contrarily, 26,7% of firms bought the ICT tools from a third party and implemented them without alteration. The remaining 18,9% came into possession of ICTs without buying, for example using free tools available on the Internet, etc. Results from similar studies showed that the tourism industry SME's are passively users and not actively creators of innovation. However, rapid changes in the competitive environment brought forth a positive shift with 54,4% of sampled agencies innovating in the field of ICT.

Table 10. Percentage of ICT innovation rate first-movers

ICT innovation is new for my business and my competitive environment					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	18	31,0	31,0	31,0
	10	5	8,6	8,6	39,7
	20	9	15,5	15,5	55,2
	25	1	1,7	1,7	56,9
	30	5	8,6	8,6	65,5
	40	1	1,7	1,7	67,2
	50	9	15,5	15,5	82,8
	60	3	5,2	5,2	87,9
	70	5	8,6	8,6	96,6
	75	1	1,7	1,7	98,3
	80	1	1,7	1,7	100,0
	Total	58	100,0	100,0	

Source: author's own construction

Following question was related towards the speed with which ICTs are implemented after their release. In a manner that new, high-end ICT tools are extremely costly and not widespread among SMEs, competitors use was taken as a reference point. The following two statements where evaluated: 1. ICT innovation is new for my business and my competitive environment and 2. ICT innovation is new for my business but was already implemented by my competitors. The answers where given in the form of a split percentage rate. Data in Table

10. shows that 18 agencies (31%) said the percentage of ICT innovation they implemented first among their competitors to be 0. Meaning they were obtaining new technologies only after it was seen as inevitable. As opposed, only one firm implemented 80% of their ICT innovations before their rivals and are thus characterized as first-movers.

Finally, the last question in the survey was a second set of statements regarding travel agencies general perception about ICT innovations. Again, a Likert scale from 1 to 5 was used to measure satisfaction rates separately for each statement. The average means are shown in Table 11. This time the means for all 5 statements are dispersed. Generally, ICT are seen as expensive, thus hampering a more extensive use (average mean 3,52). However, they are not majorly perceived as difficult to operate with an average mean of 2,93. Even most of the agencies agreed that ICTs are costly, the benefits technology creates are overpowering the bigger expenses needed for their acquiring (average mean 2,55). With an average mean of 3.33 more than half of the respondents acknowledged that if the demand trends created a need for more advanced technology they would engage is such. Finally, the biggest matching, with an average mean of 4,02, concluded that in the future travel agencies are prone to implement more ICT innovations.

Table 11. The average means on respondents' general ICTs perception

Descriptive Statistics		
	N	Mean
We would use more ICT innovations if their implementation wasn't so expensive	58	3,52
We would implement more ICT innovations if their use wasn't so complex	58	2,93
We believe that the costs of implementing ICT innovation are greater than the benefits they produce	58	2,55
We would introduce more ICT innovation if the market needs were such	58	3,33
In the future, we are planning to use more ICT innovations	58	4,02
Valid N (listwise)	58	

Source: author's own construction

4.3. Test of the proposed hypotheses

In the following chapter the testing of the underlined research hypothesis was carried out by applying appropriate statistical tests. The testing begins with the first research hypothesis that states:

H1: Higher ICT innovation implementation rates account for higher profit levels

- This hypothesis tries to establish a positive relationship between higher levels of ICT implementation within a travel agency and their financial performance indicators. For testing purposes all ICT innovations from question 10 were counted down and a new variable *ICT innovation count* was created which will be used onwards.

Two auxiliary hypotheses will serve to test the main H1 hypothesis:

H1a: The ICT innovation application rate significantly affects the profit rates of travel agencies

H1b: There is a positive correlation between ICT innovation rate and profit rates in travel agencies

Firstly, with the one-way analysis of variances it has to be established if factor A significantly influences the numeric values of factor X. Therefore, the One-Way ANOVA hypotheses are:

H_0: ….. $\sigma_A^2 = 0$

H_1: ….. $\sigma_A^2 \neq 0$

It is necessary to emphasize that the One-Way ANOVA can be carried out assuming the condition of homogeneity of variances in the sample is met, i.e. that (Pivac, S. 2010):

H_0: ….. $\sigma_1^2 = \sigma_2^2 = \ldots = \sigma_k^2$

Table 12. Levene's test of homogeneity of Variances

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
ICT innovation count	Based on Mean	1,465	3	54	,234
	Based on Median	1,274	3	54	,293
	Based on Median and with adjusted df	1,274	3	48,265	,294
	Based on trimmed mean	1,462	3	54	,235

Source: author's own construction

From the results in Table 12. it is evident that the empirical signification level is α* > 5% for all the based observations (α_1^* = 0,234; α_2^* = 0,293; α_3^* = 0,294; α_4^* = 0,235). Therefore, the condition of variance homogeneity is met, which enables proceeding with the ANOVA test.

Table 13. One-Way ANOVA results

ANOVA

ICT innovation count

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	78,415	3	26,138	3,280	,028
Within Groups	430,361	54	7,970		
Total	508,776	57			

Source: author's own construction

According to the results of Table 13. the empirical value of the F-test is:

$$F^* = \frac{\sum_{j=1}^{k} n_{j*}(\bar{X}_{.j} - \bar{X}_{..})^2/(k-1)}{\sum_{j=1}^{k}\sum_{i=1}^{n}(X_{ij} - \bar{X}_{.j})^2/n-k} = \frac{s_A^2}{s_n^2} = 3{,}280$$

And the empirical signification level is α*= 0,028 = 2,8% $\Longrightarrow$ α* < 5% $\rightarrow H_1$

The null hypothesis can be discarded and concluded that the variance of factor A is statistically significant (different from zero) i.e. the ICT innovation application rate (factor A) is statistically affecting the profit rate in travel agencies. Thus, the H1a hypothesis is accepted.

Secondly, testing the correlation between variables in the sample the following hypotheses are laid down:

H_0: ….. $r = 0$

H_1: ….. $r \neq 0$

Where *r* represents Pearson's coefficient of linear correlation with the values of:

r = -1; r = 1	indicates a functional negative/positive correlation
-1 < $r \leq$ -0,8; 0,8 $\leq r <$ 1	indicates a strong negative/positive correlation
-0,8 < $r \leq$ -0,5; 0,5 $\leq r <$ 0,8	indicates a medium negative/positive correlation
-0,5 < r < 0; 0 < r < 0,5	indicates a low negative/positive correlation
r = 0	indicates no correlation

Table 14. shows that the correlation between ICT innovations and net annual profit rate on the count of 58 travel agencies is r = 0,322, accounting for a low positive correlation in the sample. Respectively, if a travel agency has a bigger rate of ICT innovations implemented it can be presumed that they will also have a bigger net annual profit rate.

Table 14. Coefficient of correlation between ICT innovation implementation and net annual profit of a travel agency

Correlations			
		ICT innovation count	Net annual profit
ICT innovation count	Pearson Correlation	1	,322*
	Sig. (2-tailed)		,014
	N	58	58
Net annual profit	Pearson Correlation	,322*	1
	Sig. (2-tailed)	,014	
	N	58	58

*. Correlation is significant at the 0.05 level (2-tailed).

Source: author's own construction

The signification level $\alpha^* = 0{,}014 = 1{,}4\% \Longrightarrow \alpha^* < 5\% \rightarrow H_1$ and the null hypothesis can be discarded. Accordingly, the correlation coefficient between ICT innovation implementation rate and the net annual profit a travel agency has is statistically significant at the significance level of 5%. Therefore, the hypothesis H1b can also be accepted.

Following the presented data set both auxiliary hypotheses (H1a and H1b) have been accepted. Hence, the main H1 hypothesis is also being accepted.

H2: Higher ICT innovation implementation rates account for higher levels of market share

- The second hypothesis is stating a positive relationship between higher levels of ICT implementation and higher competitive advantage of a firm.

In order to accept or reject the main hypothesis 2 auxiliary hypotheses were established:

H2a: The ICT innovation application rate significantly affects the market share rates of travel agencies

H2b: ICT investment has significantly increased the competitiveness of your agency

Firstly, with the one-way analysis of variances it has to be established if factor A significantly influences the numeric values of factor X. Therefore, the One-Way ANOVA hypotheses are:

H_0: ….. $\sigma_A^2 = 0$

H_1: ….. $\sigma_A^2 \neq 0$

It is necessary to emphasize that the One-Way ANOVA can be carried out assuming the condition of homogeneity of variances in the sample is met, i.e. that (Pivac, S. 2010):

H_0: ….. $\sigma_1^2 = \sigma_2^2 = \ldots = \sigma_k^2$

Table 15. Levene's test of homogeneity of Variances

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
ICT innovation count	Based on Mean	1,655	2	48	,202
	Based on Median	1,557	2	48	,221
	Based on Median and with adjusted df	1,557	2	47,805	,221
	Based on trimmed mean	1,660	2	48	,201

Source: author's own construction

From the test results in Table 15. it is evident that the empirical signification level is α* > 5% for all the based observations (α_1^* = 0,202; α_2^* = 0,221; α_3^* = 0,221; α_4^* = 0,201). Therefore, the condition of variance homogeneity is met, which enables proceeding with the ANOVA test.

Table 16. One-Way ANOVA results

ANOVA					
ICT innovation count					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	50,787	3	16,929	2,065	,117
Within Groups	393,521	48	8,198		
Total	444,308	51			

Source: author's own construction

According to the results of Table 16. the empirical value of the F-test is:

$$F^* = \frac{\sum_{j=1}^{k} n_{j*}(\bar{X}_{.j} - \bar{X}_{..})^2/(k-1)}{\sum_{j=1}^{k}\sum_{i=1}^{n}(X_{ij} - \bar{X}_{.j})^2/n-k} = \frac{S_A^2}{S_n^2} = 2{,}065$$

And the empirical signification level is α*= 0,117 = 11,7% $\Longrightarrow$ α* > 5% $\rightarrow H_0$

The null hypothesis is accepted and concluded that the variance of factor A is not statistically significant (similar to zero) i.e. the ICT innovation application rate (factor A) is not

statistically affecting the market share rate in travel agencies. Thus, the H1a hypothesis is rejected.

Secondly, the H2b was defined as a statement in the survey questioner where respondents had to rate their agreement level on a Likert scale from 1 to 5. For this observation the grade 1 presented the lowest mark (fully disagree that ICT innovation investment has significantly increased the competitiveness of your agency), grade 3 a neutral viewpoint, while grade 5 was connected to the highest agreement level (fully agree that ICT innovation investment has significantly increased the competitiveness of your agency).

Conclusions upon the auxiliary H2b will be made in accordance to the one-way t-test results testing the average means of the observation sample on its upper tail. The null hypothesis assumes that the difference between the average means and the comparison value is equal to zero, while the upper-tailed alternative hypothesis assumes that the sample average mean is greater than the test value. As the reference test value, the grade 3 is chosen, based on the conclusion that values surpassing 3 are indicating a positive agreement level. It should be emphasized that the empirical significance of less than 5% means a statistically significant average mean agreement level, i.e., acceptance of H2b, whereas empirical significance greater than 5% states a statistically insignificant average mean agreement level, i.e., rejection of the H2b.

H_0: ….. $\bar{X} = 3$

H_1: ….. $\bar{X} > 3$

Table 17. Average mean of agreement level with the statement *ICT investment has increased the firm's competitiveness*

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
ICT investment has increased the competitiveness of your agency	58	3,84	,834	,109

Source: author's own construction

Table 17. presents that the average mean of the agreement level that ICT investment has increased the competitiveness of a travel agency is 3,84 and is further compared to the test value 3. The conclusion is based on the results presented in Table 18. where the empirical

signification level is equal to zero (α* = ,000). Therefore, α* < 5% $\Longrightarrow$ H_1, and concluded that the average mean of agreement level is statistically significantly higher from the tested value. In other words, ICT investment has significantly increased the competitiveness of a travel agency, meaning that H2b is accepted.

However, with H2a being rejected and presenting a more direct connection, the main H2 hypothesis is discarded.

Table 18. T-test results of the average mean agreement level with the statement *ICT investment has increased the firm's competitiveness*

One-Sample Test						
	Test Value = 3					
					95% Confidence Interval of the Difference	
	T	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
ICT investment has increased the competitiveness of your agency	7,719	57	,000	,845	,63	1,06

Source: author's own construction

H3: The implementation ratio of ICT innovations in a travel agency is positively linked with its number of employees

- The job of the third hypothesis is to test whether larger travel agencies (in the scope of number of employees) innovate more than smaller ones. This statement has been a critical issue in a vast number of academic researches so far.

Again, two auxiliary hypotheses will serve to test the main H3 hypothesis:

H3a: The ICT innovation application rate is significantly influenced by the number of employees a travel agency has

H3b: There is a positive correlation between ICT innovation rate and the number of employees a travel agency has

Firstly, with the one-way analysis of variances it has to be established if factor A significantly influences the numeric values of factor X. Therefore, the One-Way ANOVA hypotheses are:

H_0: ….. $\sigma_A^2 = 0$

H_1: ….. $\sigma_A^2 \neq 0$

It is necessary to emphasize that the One-Way ANOVA can only be carried out assuming the condition of homogeneity of variances in the sample is met, i.e. that (Pivac, S. 2010):

$H_0: \ldots\ldots \sigma_1^2 = \sigma_2^2 = \ldots = \sigma_k^2$

Table 19. Levene's test of homogeneity of Variances results

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
ICT innovation count	Based on Mean	2,045	3	54	,118
	Based on Median	1,862	3	54	,147
	Based on Median and with adjusted df	1,862	3	47,928	,149
	Based on trimmed mean	2,040	3	54	,119

Source: author's own construction

From the results shown in Table 19. it is evident that the empirical signification level is α* > 5% for all the based observations (α_1^* = 0,118; α_2^* = 0,147; α_3^* = 0,149; α_4^* = 0,119). Therefore, the condition of variance homogeneity is met, which enables proceeding with the ANOVA test.

Table 20. One-Way ANOVA results

ANOVA					
ICT innovation count					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	70,044	3	23,348	2,874	,045
Within Groups	438,732	54	8,125		
Total	508,776	57			

Source: author's own construction

According to the results of Table 20. the empirical value of the F-test is:

$$F^* = \frac{\sum_{j=1}^{k} n_{j^*}(\bar{X}_{.j} - \bar{X}_{..})^2/(k-1)}{\sum_{j=1}^{k}\sum_{i=1}^{n}(X_{ij} - \bar{X}_{.j})^2/n-k} = \frac{S_A^2}{S_n^2} = 2{,}874$$

And the empirical signification level is α*= 0,045 = 4,5% $\Longrightarrow$ α* < 5% $\rightarrow H_1$

The null hypothesis can therefore be discarded and concluded that the variance of factor A is statistically significant (different from zero) i.e. that the number of employees (factor A) is statistically influencing the ICT innovation application rate in travel agencies. Thus, the H3a hypothesis is accepted.

Secondly, to determine the type of relationship between variables in the sample the correlation testing proceeds. Hypotheses are as follows:

H_0: …..$r = 0$

H_1: …..$r \neq 0$

Where *r* represents Pearson's coefficient of linear correlation with the values of:

r = -1; r = 1	indicates a functional negative/positive correlation
-1 < $r \leq$ -0,8; 0,8 $\leq r <$ 1	indicates a strong negative/positive correlation
-0,8 < $r \leq$ -0,5; 0,5 $\leq r <$ 0,8	indicates a medium negative/positive correlation
-0,5 < $r <$ 0; 0 < $r <$ 0,5	indicates a low negative/positive correlation
r = 0	indicates no correlation

Table 21. Coefficient of correlation between ICT innovation implementation and number of employees in travel agencies

Correlations

		ICT innovation count	Number of employees
ICT innovation count	Pearson Correlation	1	,299*
	Sig. (2-tailed)		,023
	N	58	58
Number of employees	Pearson Correlation	,299*	1
	Sig. (2-tailed)	,023	
	N	58	58

*. Correlation is significant at the 0.05 level (2-tailed).

Source: author's own construction

Table 21. shows that the correlation between ICT innovations and number of employees on the sample of 58 travel agencies is r = 0,299, accounting for a low positive correlation in the sample. Respectively, if a travel agency has a higher rate of ICT innovations implemented it can be presumed that they will also have a higher number of employees.

The signification level α*= 0,023 = 2,3% $\Longrightarrow$ α* < 5% $\rightarrow$ H_1 and the null hypothesis can be discarded. Accordingly, the correlation coefficient between ICT innovation implementation rate and the number of employees a travel agency has is statistically significant at the significance level of 5%. Therefore, the H3b hypothesis can also be accepted.

Following the presented data set both auxiliary hypotheses (H3a and H3b) have been accepted. Hence, the main H3 hypothesis is accepted as well.

H4: The implementation ratio of ICTs in a travel agency is positively linked with the growth of organisational performance

- The fourth hypothesis tries to establish a positive relation between the ICT implementation ratio and the improvement of both internal (facing towards organisational schemes) and external (facing towards the customer) efficiency.

Testing of the main H4 is based upon statistical analysis of 5 statements. The statements were defined in the survey questioner where respondents had to rate their agreement level on a Likert scale from 1 to 5. For all of the 5 observations the grade 1 presented the lowest mark (fully disagree that ICT enables more efficient employee outputs, enhances organisational culture, etc.), grade 3 a neutral viewpoint, while grade 5 was connected to the highest agreement level (fully agree that ICT enables more efficient employee outputs, enhances organisational culture, etc).

Conclusions upon the main H4 will be made in accordance to the one-way t-test results testing the average means of the observation sample on its upper tail. The null hypothesis assumes that the difference between the average means and the comparison value is equal to zero, while the upper-tailed alternative hypothesis assumes that the sample average mean is greater than the test value. As the reference test value, the grade 3 is chosen, based on the conclusion that values surpassing 3 are indicating a positive agreement level.

It should be emphasized that the empirical significance of less than 5% means a statistically significant average mean agreement level, i.e., acceptance of H4, whereas empirical significance greater than 5% states a statistically insignificant average mean agreement level, i.e., rejection of the H4.

The hypotheses are underlined as follows:

H_0: ……$\bar{X} = 3$
H_1: ……$\bar{X} > 3$

Table 22. Average mean of agreement level for the tested statements

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
The use of ICT has enabled your employees to work more efficiently	58	3,90	,852	,112
ICT has enhanced the organizational culture of your business	58	3,90	,852	,112
ICT innovations have made it easier to track employee performance and progress in your agency	58	3,40	,935	,123
The use of ICT innovation has made it easier to adjust to the wishes and needs of your customers	58	3,79	,853	,112
The use of ICT has increased the satisfaction of your customers and reduced the number of complaints on your products and services	58	3,97	,898	,118

Source: author's own construction

As the test is repetitive for all the five different statements they were presented as a collective in Table 22. The results show the average mean of the agreement level being over 3 for all observations ($\overline{X_1}$ = 3,9; $\overline{X_2}$ = 3,9; $\overline{X_3}$ = 3,4; $\overline{X_4}$ = 3,79; $\overline{X_5}$ = 3,97). The means are further compared to the test value 3.

The conclusion is based on the results presented in Table 23. where the empirical signification level is equal to zero (α_1^* = ,000; α_2^* = ,000; α_3^* = ,002; α_4^* = ,000; α_5^* = ,000) for all observations. Therefore, $\alpha^* < 5\% \Longrightarrow H_1$, and concluded that the average mean of agreement level is statistically significantly higher from the tested value.

In other words, the use of ICT has significantly enabled employees to work more efficiently, enhanced the organisational culture of the travel agency and made it easier to track employee performance. Moreover, the use of ICT innovations has significantly eased adjustment to customer demands, increased their satisfaction and lowered the number of complaints on consumed products and services.

Finally, with all of the aforementioned 5 statements proven to be statistically significant the main H4 hypothesis is accepted.

Table 23. T-test results of the average mean agreement level for the tested statements

One-Sample Test						
	Test Value = 3					
					95% Confidence Interval of the Difference	
	T	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
The use of ICT has enabled your employees to work more efficiently	8,014	57	,000	,897	,67	1,12
ICT has enhanced the organizational culture of your business	8,014	57	,000	,897	,67	1,12
ICT innovations have made it easier to track employee performance and progress in your agency	3,228	57	,002	,397	,15	,64
The use of ICT innovation has made it easier to adjust to the wishes and needs of your customers	7,077	57	,000	,793	,57	1,02
The use of ICT has increased the satisfaction of your customers and reduced the number of complaints on your products and services	8,191	57	,000	,966	,73	1,20

Source: author's own construction

4.4. Discussion of the results and research limitations

Based upon the analytical results of the survey conducted on the sample of 58 Croatian travel agencies it can be deduced that Information Communication Technologies statistically significant influence their performance indicators. A positive correlation is evident in the case of financial performance increase, namely profit growth, and organisational performance in the form of expanded employee efficiency, organisational culture and higher customer satisfaction rates.

Contrarily, a positive correlation between a more intense ICT innovation use and increased market share could not be statistically proven. Market share indicators are far more complex to detect than a simple profit increase. The ladder has been supported in the survey results

with more firms voiding to answer and tending to underestimate their results concerning the firm's competitiveness.

Concerning the travel agencies innovativeness towards ICT tool implementations different outcomes can be subtracted. Firstly, the average innovation rate agencies use in their operations are 8,33 ICT tools out of 18, with the lowest occurred answer being 3 and the highest 15 innovations. As tourism firms are usually labelled being low innovative this model confirms the rule as it is presenting a low to medium innovative sample. Adding to the ladder is the connection of firm size (given in number of employees) and ICT implementation rate, stating the larger the firm is the more it is keen to implementing technological innovations. Test results indicated a low positive correlation between the variables, thus supporting the general accepted statement of larger companies introducing more innovations.

Secondly, moving towards the speed with which agencies acquire new ICT tools. The data has shown that in the last five years firms experienced a technology boom by almost doubling their former innovation rates. The boost was mostly evident in the case of eMarketing solutions (newsletters and social media) and cloud systems for data storage, indicating that agencies are aware of up-to-date technology improvements and to some extent timely implement them. However, these results need to be taken with caution since they might include agencies that started to operate in the last five years and did not record any previous ICT usages.

Thirdly, technology acquisition among tourism enterprises is seen to be external, and firms in general are not perceived to be actively involved in the innovation process. The data, however, suggested more than half of the sample being actively engaged in either creation of new innovation (in their own R&D facilities or in partnership with a third party) or improvement and personalization of existing ones. While the remaining 45% present supplier dominated businesses, who are passively using existing ICT tools.

Regarding the imitation effect of tourism firms, a common perception is that enterprises implement new technology replicating their competitors, which, in case of the presented data, suggested to be accurate. Only a fraction of tourism agencies where seen as first-movers, implementing the majority of ICT tools before their competitors. Generally, since a part of the results were collected over a telephone survey the main impression was that travel agencies

are not aware of, neither interested in, the technological tools their competition is using. Therefore, a vast number of the answers was a neutral, but still overestimating 50:50 ratio.

The main research limitation was the time in which the research was conducted. The period from May to June presented a highly stressful and work intensive month regarding the operational work load. Increasing the sample would help gain a better understanding of the perceptions travel agencies have towards ICTs and innovation.

Another research limitation is the inability to guarantee if the adequate personnel responded to the survey questions. The questionnaire was intended and addressed for medium and upper management, being familiar with essential operational information. However, since it was sent out by e-mail, and not addressed to a specific person all employees, regardless of their managerial position are likely to be the respondents.

5. CONCLUSION

The innovative behaviour of firms has been a major point of interest in the research of many scholars in recent years. Questions such as what is generating innovation and what kind of innovation is most common among certain types of firms are only a fraction of many other that have arisen from these studies. Innovations occur in various forms, presenting both brand new products or services, as well as the smart improvement of their existing features adding up increased values. Sometimes, due to their nature, service innovations remain undetected when compared to visible product innovations occurred in the manufacturing industry. The principals of innovation creation are the same, yet, the service industry – tourism in particular, have distinctive features shaping their innovative behaviour that should not be ignored.

In the last couple of decades, the occurrence of information communication technologies (ICTs), classified as a technological or process innovation, brought forth rapid changes in the competitive environment of firms. The survival of the traditional distribution channels was questionable to a great extent. Most evident was the impact on tourism, one of the early ICT adopters, and the traditional role of the intermediaries – travel agencies. However, changes in the ICT field have continued to thrive and since the infancies of their implementation, newer, more advanced innovations have been introduced. Agencies successfully implementing such improved technological advances into their daily operations were able to gain increased profit and market share surpassing their competitors, thus shaping the future of the tourism industry.

In Croatia the travel and tourism industry is represented by a vast number of small and medium sized enterprises. With 1094 registered travel agencies, according to the National Tourism Board for 2017., the intermediary sector serves as an excellent representation. Being business units, travel agencies main focus is profit generation and ICT tools are a means to achieving that goal.

Empirical research on the above mentioned sample of travel agencies in Croatia was undertaken in order to distinguish the ICT implementation rate among them, the implications such implementation has on their performance and to gain insight of their attitudes towards innovation. Data showed that travel agencies in Croatia are not implementing ICT tools in their full potential. The sample presented low to medium innovative firms using an average of 8,33 ICT applications out of a total 18. The highest rate of use, as expected was recorded for a travel agencies own web-site and social media accounts, both presenting potent marketing tools. Contrarily, the lowest use was in the field of own developed mobile applications which

present a high-end ICT tool and eLearning. Based on statistical tests the hypothesis putting in correlation the ICT rate of use and enterprise size in terms of number of employees was proven to be statistically accepted. In other words, the more employees a travel agency has, the more ICT tools it will be implementing. Secondly, the correlation between ICT rate of use and profit indicators suggested that a positive statistical correlation exists. Strictly speaking, the more ICT tools a travel agency uses in their daily operations the bigger the generated profit at the end of the business year will be. A statistical correlation between ICT rate of use and market share growth has not been found. Travel agencies were not confident in perceiving the position they hold in the market they compete on, as well as quantifying their exact percent of annual market share growth. Lastly, organisational performance was evaluated in correlation towards ICT rate of use. For all the tested statement indicators a positive link has been confirmed. In other terms, higher ICT implementation implies increased organisational performance in the form of expanded employee efficiency, improved organisational culture and higher customer satisfaction rates. However, increased ICT investment and use will not, by itself, give rise to improved productivity if the affected workforce is not receiving adequate training and upskilling possibilities.

Tackling the attitudes travel agencies evolve towards innovations the last set of the survey questions indicated that the sample did not follow the general supplier-dominated pattern present in the tourism sector. When obtaining technology agencies slightly tend to be innovators and not externally outsourcing existing ICT solutions. On the other hand, the imitation effect is existent in the sample, meaning travel agencies generally only implement ICT innovations after their competitors. Finally, with an average mean of 4,02 travel agencies strongly agree that in the future, due to forthcoming technological changes, they will implement more ICT innovations, thus supporting they operational tasks and maintaining their competitive positions on the electronic marketplace.

BIBLIOGRAPHY

1. Abernathy, W.J. and Clark, K.B. (1985), Innovation: mapping the winds of creative destruction, Readings in the Management of Innovation, 2nd edition, Cambridge, MA: Ballinger, pp. 55 – 78
2. Aldebert, B., et al. (2010), Innovation in the tourism industry: The case of Tourism@, Tourism Management, Vol. 32, pp. 1204 – 1213
3. Alonso-Almeida, M.M. & Llach, J. (2013) Adoption and use of technology in small business environments, The Service Industries Journal, 33:15-16, pp. 1456-1472
4. Balazs, H. & Szabo, K. (2011) Organizational innovations and their behavioural background, Proceedings of the "Scientific management" and "Management Science Today", International Scientific Conference, University of Szeged, Faculty of Economics and Business, pp 179 – 190
5. Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. Management Decision, 47 (8), pp. 1323 - 1339.
6. Blake, A., Sinclair M.T., Soria, J.A.C. (2006). Tourism Productivity evidence from the United Kingdom, Annals of Tourism Research, Vol. 33(4), pp. 1099 – 1120
7. Brandão, F. (2014). Innovation in Tourism: The Role Of Regional Innovation Systems, PhD in Tourism, University of Aveiro
8. Brooker, E. & Joppe, M. (2014) Developing a Tourism Innovation Typology: Leveraging Liminal Insights, Journal of Travel Research 2014, Vol. 53(4), pp. 500 – 508
9. Buhalis D., (2003) eTourism: Information technology for strategic tourism management, Harlow, UK: Prentice Hall
10. Buhalis, D., (2000) Tourism and Information Technologies: Past, Present and Future, Tourism Recreation Research, Vol. 25:1, pp. 41 – 58
11. Buhalis, D. & Kaladis, K., (2015) eEnabled Internet Distribution for small and medium sized hotels: The Case of Hospitality SMEs in Athens, Tourism Recreation Research, Vol 33:1, pp. 67 – 81
12. Buhalis, D. & Law, R., (2008.) Progress in information technology and tourism management: 20 years on and 10 years after the Internet the state of eTourism research. *Tourism Management*, Vol. 29 (4), pp. 609 – 623
13. Buhalis, D., & O'Connor, P., (2005) Information Communication Technology Revolutionizing Tourism, Tourism Recreation Research, 30:3, pp. 7 – 16

14. Coombs, R. and Miles, I. (2000) Innovation, measurement and services: the new problematique, in: S. J. Metcalfe & I. Miles (Eds) Innovation Systems in the Service Sectors. Measurement and Case Study Analysis, pp. 85 – 104
15. Dhaigude, A.S., Kapoor R. & Ambekar, S. (2016) A conceptual model for adoption of information communication technology in the travel and tourism industry, Tourism Recreation Research, 41:1, pp. 49 – 59
16. Edquist, C. (1997). Systems of Innovation: Technologies, Institutions and Organizations. London: Pinter
17. Edquist, C. (2001). The Systems of Innovation Approach and Innovation Policy: An Account of the State of the Art. Paper presented at the Lead paper presented at the DRUID Conference on "National Systems of Innovation, Institutions and Public Policies", Aalborg, 12-15 June
18. Fuchs, M., Höpken, W., Zanker, M., Beer, T. (2010) Context-based adaptation of mobile applications in tourism. Information Technology & Tourism, Vol. 12(2): pp 175 – 195
19. Hall, C. M., & Williams, A. M. (2008). Tourism and innovation. New York Routledge.
20. Hjalager, A.-M. (1994). Dynamic innovation in the tourist industry, Progress in Tourism Recreation and Hospitality Management, Vol. 6, pp 197 – 224
21. Hjalager, A. M. (2002), Repairing innovation defectiveness in tourism, Tourism Management, Vol. 23, pp. 465 – 474
22. Hjalager, A. M. (2010), A review of innovation research in tourism, Tourism Management, Vol. 31, pp. 1 – 12
23. Hoarau, H. (2014), Knowledge Acquisition and Assimilation in Tourism Innovation Processes, Scandinavian Journal of Hospitality and Tourism, Vol. 14:2, pp. 135 – 151
24. Gallouj, F., & Weinstein, O. (1997). Innovation in services. Research Policy, Vol. 26 (4-5), pp 537 – 556
25. Gomezelj, D. O., (2016) "A systematic review of research on innovation in hospitality and tourism", International Journal of Contemporary Hospitality Management, Vol. 28: 3, pp. 516 – 558
26. Kala, D. & Bagri, S.C., (2014), Key Performance Indicators for Hospitality Industry: A study from the tourist state of Uttarakhand, India, Tourismos: An International Multidisciplinary Journal of Tourism, Vol.9:1, pp. 187 – 206

27. Kumar, A., & Lim, H. (2008). Age differences in mobile service perceptions: Comparison of generation Y and baby boomers. The Journal of Services Marketing, Vol. 22(7), pp. 568 – 577
28. Law, R., Leung, R. & Buhalis, D. (2009) Information technology applications in hospitality and tourism: a review of publications from 2005 to 2007, Journal of Travel & Tourism Marketing, Vol. 26:5-6, pp. 599 – 623
29. Law, R., Buhalis, D. & Cobanoglu, C. (2014) Progress on information and communication technologies in hospitality and tourism, International Journal of Contemporary Hospitality Management, Vol. 26:5 pp. 727 – 750
30. Liburd, J. (2005), Sustainable tourism and innovation in mobile tourism services, Tourism Review International, Vol. 9, pp. 1 – 12
31. Meneses, O. A. M. & Teixeira, A. A. C. (2011) The innovative behaviour of tourism firms, Economics and Management Research Projects: An International Journal, Open Access International Journals, Vol. 1(1), pp. 25 – 35
32. Miles, I. (2008). Patterns of innovation in service industries, IBM Systems Journal, Vol. 47:1, pp 115 – 128
33. Miozzo, M. and Soete, L. (2001) Internationalization of services: a technological perspective, Technological Forecasting and Social Change, Vol. 67(2/3), pp. 159 –185
34. OECD, (2006) Innovation and Growth in Tourism, Paris OECD Publishing
35. OECD. (2005). Oslo Manual Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition. Paris OECD Publishing
36. Pivac, S. (2010): *Statističke metode: e-nastavni materijal*, Ekonomski fakultet u Splitu, Split.
37. Pivčević, S., & Praničević, D.G. (2012) Innovation activity in the hotel sector - The case study of Croatia, Economic Research - Ekonomska Istraživanja, Vol. 25, SE 1, pp. 337 – 363
38. Purcell, R and McGrath, F. (2013) The Search for External Knowledge, The Electronic Journal of Knowledge Management Vol. 11, Issue 2 pp. 158 – 167
39. Schumpeter, J. A. (1942). Capitalism, Socialism and Democracy. New York: Harper & Brothers
40. Schumpeter, J. A. (1939). The Theory of Economic Development: an inquiry into profits, capital, credit, interest, and the business cycle. Cambridge, Mass.: Harvard University Press

41. Standing, C., Tang-Taye, J.-P. & Boyer, M. (2014) The Impact of the Internet in Travel and Tourism: A Research Review 2001–2010, Journal of Travel & Tourism Marketing, 31:1, pp. 82 – 113
42. Sørensen, F. (2007), "The geographies of social networks and innovation in tourism", Tourism Geographies, Vol. 9 No.1, pp.22 - 48
43. Sundbo, J., Orfila – Sintes, F., & Sørensen, F. (2007). The innovative behaviour of tourism firms - comparative studies of Denmark and Spain. Research Policy, Vol. 36, pp. 88 – 106
44. Teece, D. J. (2010). Business models, business strategy and innovation. Long range planning, Vol. 43(2), pp. 172 – 194
45. Tether, B. S. (2005), Do Services Innovate (Differently)? Insights from the European Innobarometer Survey, Industry & Innovation, Vol. 12(2), pp. 153 – 184
46. Torrent-Sellens, J., Ficapal-Cusí, P., Boada-Grau, J. & Colet, A.V. (2016) Information and communication technology, co-innovation, and perceived productivity in tourism small and medium enterprises: an exploratory analysis, Current Issues in Tourism, 19:13, pp. 1295 – 1308
47. Utterback, J., & Abernathy, W. (1975). A Dynamic Model of Process and Product Innovation. Omega, Vol. 3(6), pp. 639 – 656
48. Zelenika, R. (2000), Methodology and technology of making a scientific and professional work, p. 310, 4th ed., Rijeka: Faculty of Economics

LIST OF FIGURES

Figure 1. Transilience map of innovation breakdown 16

Figure 2. Determinants of innovation in service firms 22

Figure 3. Factors hampering innovation activities 23

Figure 4. Tourism firm classification according Sectoral Taxonomies of Technological Activities 29

Figure 5. Three organisational forms of tourism firms 31

Figure 6. ICT enabled e-tourism trends 36

Figure 7. Main technologies according to years 39

Figure 8. Travel agencies according to years of operation 45

Figure 9. Travel agencies according to number of full-time employees 46

Figure 10. Travel agencies according to profit levels 47

Figure 11. Future ICT investment rate in travel agencies 50

LIST OF TABLES

Table 1. Educational level of employees in travel agencies 46

Table 2. Primary business segment of operation..... 47

Table 3. Approximate percentage of online sales 48

Table 4. Estimate of intensity and variety of daily ICT usage 48

Table 5. ICT innovation implementation rate and variety 49

Table 6. Investment in last 6 months..... 50

Table 7. The average means on respondents' satisfaction of ICT implementation benefits.... 51

Table 8. Profit growth in travel agencies for the year 2017. 52

Table 9. Market share growth in travel agencies for the year 2017. 52

Table 10. Percentage of ICT innovation rate first-movers..... 53

Table 11. The average means on respondents' general ICTs perception 54

Table 12. Levene's test of homogeneity of Variances 55

Table 13. One-Way ANOVA results 56

Table 14. Coefficient of correlation between ICT innovation implementation and net annual profit of a travel agency 57

Table 15. Levene's test of homogeneity of Variances 58

Table 16. One-Way ANOVA results 58

Table 17. Average mean of agreement level with the statement *ICT investment has increased the firm's competitiveness* 59

Table 18. T-test results of the average mean agreement level with the statement *ICT investment has increased the firm's competitiveness* 60

Table 19. Levene's test of homogeneity of Variances results..... 61

Table 20. One-Way ANOVA results 61

Table 21. Coefficient of correlation between ICT innovation implementation and number of employees in travel agencies 62

Table 22. Average mean of agreement level for the tested statements 64

Table 23. T-test results of the average mean agreement level for the tested statements 65

APPENDIX A

Survey questionnaire - English

The first set of questions regards general information about your Travel agency:

1. How long is your Travel agency operating?

   - ○ Less than 5 years
   - ○ From 5 to 10 years
   - ○ From 11 to 20 years
   - ○ More than 21 years

2. How many full-time employees work in your Travel agency?

   - ○ 3 and less employees
   - ○ From 4 to 10 employees
   - ○ From 11 to 20 employees
   - ○ From 21 to 50 employees
   - ○ More than 50 employees

3. Please estimate, in percentages, so that the total sum is 100%, the distribution of the educational level of your employees, including yourself:

Below upper secondary - no formal educational credential	%
Upper secondary - High school diploma or equivalent	%
Tertiary – bachelor's degree and similar	%
Tertiary – master's degree or PhD	%
Total	100,00%

4. What percentage of your workforce has a completed education in the field of tourism and hospitality?

Tertiary – bachelor's degree and similar	%
Tertiary – master's degree or PhD	%
Total	100,00%

5. What is the average amount of net annual profit that your Travel agency earns in one year?

   - ○ Up to 10.000,00€
   - ○ Between 10.000,01€ and 20.000,00€
   - ○ Between 20.000,01€ and 30.000,00€
   - ○ Over 30.000,00€

6. In which branch is your agency primarily operating? If your agency operates in more than one branch, please select the one on which it bases more than 50% of its business.

   - ○ Mediation in booking accommodation
   - ○ Organizing excursions and package deals
   - ○ Charter
   - ○ Transport, rent-a-car, rent-a-bike and similar

7. According to your legal status, your Travel agency operates:

   - ○ Independent
   - ○ As part of a corporation, tour operator or travel agency chain

The next set of questions is regarding the ICT field:

8. Please estimate an approximate percentage of your product range sales directly over the Internet. Consider including any of your direct or intermediate sales channels, and direct customer inquiries via email. Do not include walk-in guests and undertaken sales over phone.

   - ○ Below 30%
   - ○ Between 31% and 50%
   - ○ Between 51% and 70%
   - ○ Between 71% and 90%
   - ○ Over 90%

9. Estimate, according to your own opinion, the intensity and variety of use of ICT innovations in your agency's work, on a scale from 1 to 10, where 1 represents extremely low and 10 extremely high intensity and variety of usage on a daily basis.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

10. Which of the following ICT innovations are you using? Consider when have you started using or implementing these ICT innovations.

	Use since the beginning	Implemented in the last 5 years	Implemented last year	We do not use
e-mail	☐	☐	☐	☐
Newsletter	☐	☐	☐	☐
Own Website	☐	☐	☐	☐
Booking Engine on your Website	☐	☐	☐	☐
Intermediary web pages like Booking.com, Airbnb, Homeaway and similar	☐	☐	☐	☐
Self-developed mobile applications	☐	☐	☐	☐
Existing mobile applications to manage your inventory such as Pulse application from Booking.com	☐	☐	☐	☐
Global distribution systems (ex. Galileo, Amadeus, Sabre, etc.)	☐	☐	☐	☐
„BackOffice“ software – for yield management and internal organisation purposes	☐	☐	☐	☐
„Front Office“ software – for managing reservations and customer relationship management databases	☐	☐	☐	☐
Channel manager	☐	☐	☐	☐
Payment gateways (ex. PayPal, WSpay, CorvusPay etc.)	☐	☐	☐	☐
Cloud systems (for storage and dana share)	☐	☐	☐	☐
Social media	☐	☐	☐	☐
Google AdWords	☐	☐	☐	☐
eBrochures, pop-up windows, web banners, etc.	☐	☐	☐	☐
Multimedia content and 3D virtual tours	☐	☐	☐	☐
eLearning as a means of employee education and training	☐	☐	☐	☐

11. Have you, in the past 6 months, spent money on the following activities:

	Yes	No
Buying of new hardware - desktop and portable computers, tablets, mobile devices and alike	☐	☐
Buying of a new software	☐	☐
Employee education for the use of new ICT equipment (hardware and software)	☐	☐

12. In the following year, the current investment in ICT innovations your agency plans to:

    - ○ Significantly increase
    - ○ Increase
    - ○ Do not change
    - ○ Decrease
    - ○ Significantly decrease

13. In the next question please mark on a scale from 1 to 5, where 1 represents „I strongly disagree“, and 5 „I strongly agree“ your agreement with the following statements:

ICT investment has increased the competitiveness of your agency	1	2	3	4	5
The use of ICT has enabled your employees to work more efficiently	1	2	3	4	5
ICT has enhanced the organizational culture of your business	1	2	3	4	5
ICT innovations have made it easier to track employee performance and progress in your agency	1	2	3	4	5
The use of ICT innovation has made it easier to adjust to the wishes and needs of your customers	1	2	3	4	5
The use of ICT has increased the satisfaction of your customers and reduced the number of complaints on your products and services	1	2	3	4	5

14. Please indicate, in percentages, the extent to which the implementation of ICT innovation in your business increased the financial result (profit) at the end of 2017 compared to 2016:

    - ○ Less than 5%
    - ○ From 5% to 20%
    - ○ From 21% to 40%
    - ○ Over 40%
    - ○ Did not increased, but decreased the profit
    - ○ Other: Indicate

15. Was this increase consistent with the expected result of using ICT innovation?
    - ○ Yes
    - ○ No

16. Please indicate, in percentages, the extent to which ICT innovation implementation in your business has increased your market share (entering new markets, expanding on existing markets and market segments) at the end of 2017 compared to 2016:
    - ○ Less than 5%
    - ○ From 5% to 20%
    - ○ From 21% to 40%
    - ○ Over 40%
    - ○ Did not increased, but decreased the profit
    - ○ Other: Indicate

17. Was this increase consistent with the expected result of using ICT innovation?
    - ○ Yes
    - ○ No

The last set of questions regards your innovation propensity.

18. Please consider all the ICT innovations you have mentioned to use in the previous section. How did you acquire these innovations before implementing them in your business? Highlight a maximum of 2 responses that are of highest importance to you as an agency.
    - ☐ We developed them individually within the company in our R&D department
    - ☐ We have developed them in cooperation with another company or agency
    - ☐ We bought them from another company and, prior to implementation, customized them to meet the needs of our organization
    - ☐ We bought them from other companies and implemented them, without any changes

☐ We came in possession without buying (received for free, use free versions available on the Internet, etc.)

19. When considering all the ICT innovations that you use, what percentage have you implemented the first in your competitive environment and what percentage of ICT innovations have already been used by your competitors when you introduced them into your business?

ICT innovation is new for my business and my competitive environment	%
ICT innovation is new for my business, but was already implemented by my competitors	%
Total	100,00%

20. Please mark on a scale from 1 to 5, where 1 represents „I strongly disagree“, and 5 „I strongly agree“ your agreement with the following statements:

We would use more ICT innovations if their implementation wasn't so expensive	1	2	3	4	5
We would implement more ICT innovations if their use wasn't so complex	1	2	3	4	5
We believe that the costs of implementing ICT innovation are greater than the benefits they produce	1	2	3	4	5
We would introduce more ICT innovation if the market needs were such (changes in demand, implementation by competitors, etc.)	1	2	3	4	5
In the future, we are planning to use more ICT innovations	1	2	3	4	5

We have come to the end of the survey questionnaire.

We cordially thank you for your cooperation and patience while fulfilling the survey.

To end, please leave us your e-mail address. It is very important for us to collect as many responses as possible to make the research results credible. Therefore, depending on the response rate, we will send out the questionnaire multiple times. To avoid sending you the same questionnaire twice, please enter your e-mail address below:

Your e-mail address: _____

APPENDIX B

Survey questionnaire – Croatian

Prvi set pitanja se odnosi na <u>opće podatke</u> o Vašoj turističkoj agenciji

1. Koliko dugo posluje Vaša turistička agencija?

   - ○ Do 5 godina
   - ○ Od 5 – 10 godina
   - ○ Od 10 – 20 godina
   - ○ Preko 21 godina

2. Koliko stalno zaposlenih radnika imate?

   - ○ 3 i manje radnika
   - ○ Od 4 – 10 radnika
   - ○ Od 11 – 20 radnika
   - ○ Od 21 – 50 radnika
   - ○ Preko 50 radnika

3. Molim Vas procijenite, u postotcima tako da ukupan zbroj bude 100%, koja je raspodjela edukacijske spreme Vaših djelatnika uključujući i Vas osobno:

Niska stručna sprema – završena/nezavršena osnovna škola	%
Srednja stručna sprema	%
Viša stručna sprema – sveučilišni prvostupnik i sl.	%
Visoka stručna sprema – završen magisterij ili doktorat	%
Ukupno	100,00%

4. Koliki postotak Vaše radne snage ima završenu naobrazbu u području turizma i ugostiteljstva?

Viša stručna sprema – sveučilišni prvostupnik i sl	%
Visoka stručna sprema – završen magisterij ili doktorat	%
Ukupno	100,00%

5. Koliki je iznos neto godišnjeg profita kojeg uprihodi poslovanje Vaše turističke agencije?

   - ○ Do 10.000,00€
   - ○ Od 10.000,01€ - 20.000,00€
   - ○ Od 20.000,01€ - 30.000,00€
   - ○ Preko 30.000,00€

6. U kojoj grani primarno posluje Vaša agencija? Ukoliko Vaša agencija posluje u više navedenih grana, odaberite onu na kojoj bazira više od 50% poslovanja.

   - ○ Posredništvo u rezerviranju smještaja
   - ○ Organizacija izleta i paket aranžmana
   - ○ Nautika
   - ○ Transport, rent-a-car, rent-a-bike I sl.

7. Prema načinu djelovanja tj. pravnom statusu Vaša agencija posluje:

   - ○ Samostalno
   - ○ U sastavu turoperatora ili kao lanac turističkih agencija

Slijedeći set pitanja se odnosi na ICT područje.

8. Navedite približan postotak prodaje Vašeg asortimana posredstvom Interneta. Molimo u razmatranje uključite bilo vlastite, bilo posredničke kanale prodaje, te direktne upite kupaca putem elektroničke pošte. Iz razmatranja isključite walk-in goste i prodaju putem telefona.

   - ○ Ispod 30%
   - ○ Između 31% I 50%
   - ○ Između 51% I 70%
   - ○ Između 71% I 90%
   - ○ Preko 90%

9. Procijenite, prema vlastitom mišljenju, intenzitet i raznolikost korištenja ICT inovacija u radu Vaše agencija na skali od 1 do 10, gdje 1 predstavlja izrazito nizak, a 10 izrazito visok intenzitet i raznolikost korištenja na dnevnoj bazi.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

10. Što od navedenoga koristite u radu Vaše agencije, te razmislite kada ste počeli koristiti tj. implementirati navedene ICT inovacije:

	Koristimo oduvijek	U zadnjih 5 godina	U zadnjih godinu dana	Ne koristimo
e-mail	☐	☐	☐	☐
Newsletter	☐	☐	☐	☐
Vlastita Internet stranica agencije	☐	☐	☐	☐
Booking Engine - mogućnost kupnje agencijskog asortimana putem vlastite Internet stranice	☐	☐	☐	☐
Posredničke web stranice za oglašavanje npr. Booking.com, Airbnb, Homeaway i dr.	☐	☐	☐	☐
Vlastito razvijene mobilne aplikacije	☐	☐	☐	☐
Postojeće mobilne aplikacije za upravljanje Vašim inventarom kao npr. Pulse aplikacija od Booking.com	☐	☐	☐	☐
Globalne distribucijske sustave (npr. Galileo, Amadeus, Sabre, itd.)	☐	☐	☐	☐
Software tipa „BackOffice“ – za upravljanje financijama, internom organizacijom poslova i sl.	☐	☐	☐	☐
Software tipa „Front Office“ – za upravljanje rezervacijama i bazama podataka kupaca	☐	☐	☐	☐
Chanel manager sustav	☐	☐	☐	☐
Integrirane sustave za on-line plaćanje (npr. PayPal, WSpay, CorvusPay i sl.)	☐	☐	☐	☐
Cloud sustave (za pohranu i dijeljenje podataka)	☐	☐	☐	☐
Društvene mreže	☐	☐	☐	☐
Google AdWords kampanje	☐	☐	☐	☐
eBrošure, pop-up, web banneri, itd.	☐	☐	☐	☐
Multimedijalne sadržaje i 3D virtualne ture Vašeg asortimana	☐	☐	☐	☐
eUčenje u svrhu obuke zaposlenika	☐	☐	☐	☐

11. Jeste li u posljednjih 6 mjeseci uložili novčana sredstva u slijedeće aktivnosti:

	Da	Ne
Kupnju novog hardwarea – stolna i prijenosna računala, tableti, mobilni uređaji i slično	☐	☐
Kupnju novog softwarea	☐	☐
Edukaciju zaposlenika za korištenje nove ICT opreme (hardware i software)	☐	☐

12. Dosadašnja ulaganja u ICT Vaša agencija u narednoj godini planira:

    - ○ Značajno povećati
    - ○ Povećati
    - ○ Ostaviti na istoj razini
    - ○ Smanjiti
    - ○ Značajno smanjiti

13. U slijedećem pitanju molimo označite u kojoj mjeri se slažete s navedenim tvrdnjama na skali od 1 do 5, gdje 1 predstavlja Izrazito se ne slažem, dok 5 predstavlja Izrazito se slažem:

Ulaganje u ICT je povećalo konkurentnost Vaše agencije	1	2	3	4	5
Korištenje ICT-a je omogućilo efikasniji rad Vaših zaposlenika	1	2	3	4	5
ICT je unaprijedio organizacijsku kulturu Vašeg poslovanja	1	2	3	4	5
ICT inovacije u Vašem poslovanju su olakšale praćenje rada i napretka zaposlenika	1	2	3	4	5
Upotreba ICT inovacija je omogućila lakšu prilagodbu željama i potrebama kupaca	1	2	3	4	5
Upotreba ICT-a je povećala zadovoljstvo Vaših kupaca, te smanjila broj pritužbi na Vaše proizvode i usluge	1	2	3	4	5

14. Molimo izrazite u postotcima, u kojoj je mjeri implementacija ICT inovacija u Vašem poslovanju povećala dobit tj. financijski rezultat na kraju 2017. godine u odnosu na 2016. godinu:

    - ○ Manje od 5%
    - ○ Od 5% - 20%
    - ○ Od 21% - 40%
    - ○ Preko 40%
    - ○ Nije povećala, već smanjila dobit
    - ○ Ostalo: Upišite

15. Je li to povećanje bilo u skladu s očekivanim rezultatom korištenja ICT inovacija?

    - ○ Da
    - ○ Ne

16. Molimo izrazite u postotcima, u kojoj je mjeri implementacija ICT inovacija u Vašem poslovanju povečala Vaš tržišni obuhvat (ulazak na nova tržišta, širenje na postojećim tržištima i tržišnim segmentima) na kraju 2017. godine u odnosu na 2016. godinu:
    - ○ Manje od 5%
    - ○ Od 5% - 20%
    - ○ Od 21% - 40%
    - ○ Preko 40%
    - ○ Nije povećala, već smanjila dobit
    - ○ Ostalo: Upišite

17. Je li to povećanje bilo u skladu s očekivanim rezultatom korištenja ICT inovacija?
    - ○ Da
    - ○ Ne

Posljednji set pitanja se odnosi na Vašu sklonost inoviranju.

18. Molimo promislite o svim ICT inovacijama koje ste označili da koristite u prethodnoj sekciji. Na koji način ste došli u posjed tih inovacija prije nego ste ih implementirali u svoje poslovanje? Označite najviše 2 odgovora koja se u najvećem postotku odnose na Vas kao agenciju.
    - ☐ Razvili smo ih samostalno unutar tvrtke u našem R&D odjelu
    - ☐ Razvili smo ih u suradnji s drugom tvrtkom ili agencijom
    - ☐ Kupili smo ih od druge tvrtke, te prije implementacije izvršili prilagodbe prema potrebama naše organizacije
    - ☐ Kupili smo ih od druge tvrtke, te implementirali, bez ikakvih promjena
    - ☐ Došli smo u posjed bez kupnje (dobili besplatno, koristimo besplatne verzije s Interneta i sl.)

19. Kada promislite o svim ICT inovacijama koje koristite koliki postotak njih ste Vi implementirali prvi u svojem konkurentskom okruženju, a koliki postotak su već koristili Vaši konkurenti kada ste ih uveli u svoje poslovanje?

ICT inovacija je nova za moje poduzeće, te je implementirana prije mojih konkurenata	%
ICT inovacija je nova za moje poduzeće, ali su je već implementirali moji konkurenti	%
Ukupno	100,00%

20. Molimo označite na skali od 1 do 5, gdje 1 predstavlja Izrazito se ne slažem, a 5 Izrazito se slažem, Vaš stupanja slaganja sa slijedećim tvrdnjama:

Koristili bi više ICT inovacija da njihova implementacija nije toliko skupa	1	2	3	4	5
Implementirali bi više ICT inovacija da njihovo korištenje nije toliko složeno	1	2	3	4	5
Smatramo da su troškovi implementacije ICT inovacija veći od njihovih koristi	1	2	3	4	5
Uveli bi više ICT inovacija u poslovanje da su potrebe tržišta bile takve (promjene u turističkoj potražnji, implementacija od strane konkurenata, itd.)	1	2	3	4	5
U budućnosti planiramo koristiti više ICT inovacija	1	2	3	4	5

Poštovani, došli smo do kraja anketnog upitnika.

Srdačno Vam se zahvaljujemo na suradnji i strpljenju prilikom ispunjavanja.

Vrlo nam je važno da prikupimo što više odgovora kako bi rezultati istraživanja bili što vjerodostojniji. Zbog toga ćemo, ovisno o odazivu, anketni upitnik slati u više navrata. Kako bi izbjegli da Vam isti upitnik šaljemo dva puta, molimo upišite svoju e-mail adresu ispod.

Vaša e-mail adresa: _____

SUMMARY

Rapid changes in the competitive environment brought forth with the introduction of information communication technologies served as a push factor for tourism intermediaries to update their organisational strategies. Travel agencies, in order to maintain their market share and increase their financial performance indicators, had to adapt to such changes by implementing innovative solutions from the ICT field. The innovation behaviour of the service industry is characterized by a vast number of small and medium enterprises in which employees play a crucial role as knowledge repositories. The main goal of this research was to analyse the ICT implementation rate among the sample of travel agencies in Croatia. Further, the implications such implementation has on their performance and to gain insight of their attitudes towards innovation. A positive correlation has been established between the variables of financial and organisational performance and firm size in relation to ICT rate of use, thus proving the value of innovative ICT deployment.

Key words: information communication technologies, innovation, innovation behaviour, performance indicators, travel agencies in Croatia

SAŽETAK

Brze promjene u konkurentskoj okolini proizašle pojavom informacijsko komunikacijskih tehnologija (IKT) poslužile su kao svojevrstan ‚push' faktor turističkim posrednicima za prilagođavanje svojim operativnih strategija. Kako bi održale svoju trenutnu poziciju na tržištu i unaprijedile financijske pokazatelje, turističke agencije su se poslužile inovativnim rješenjima s područja IKT-a. Industriju uslužnih djelatnosti karakterizira veliki broj malih i srednje velikih poduzeća čiji zaposlenici služe kao nositelji znanja i vještina ključnih pri inoviranju. Glavni cilj ovog istraživanja je bio analizirati stopu implementacije IKT-a na uzorku turističkih agencija u Hrvatskoj. Nadalje, istražiti posljedice takve implementacije na poslovanje agencija i steći uvid u njihove stavove prema procesu inoviranja. U radu je potvrđena pozitivna korelacija između varijabli financijske i organizacijske performanse, te veličine poduzeća suprotstavljene, s druge strane, stopi korištenja IKT-a u turističkim agencijama. Navedeno je potvrdilo važnost implementacije IKT inovacija u radu turističkih posrednika.

Ključne riječi: indikatori poslovanja, informacijsko komunikacijske tehnologije, inovacije, karakteristike inovacija, turističke agencije u Hrvatskoj