THE IMPACT OF ICT ON TOURISM BUSINESS-IMPROVING EFFICIENCY, PRODUCTIVITY AND BUSINESS PERFORMANCE

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Abstract:
Tourism is one of the most complex industries, which exerts considerable impact on other industries. Many abandon the thesis that tourism is a result of economic development, but increasingly accept the claim that tourism is a factor of economic development. Information and communication technologies (ICT) have been confirmed, as they increase efficiency, productivity and improve overall business performances. Numerous authors have examined the relationship between ICT application and business tourism development, but also with the aim to prove the application of various models from different perspectives. This paper aims to present some of the aspects of the connection between the application and development of ICT and improvement factors in tourism business.

Key words:
ICT, tourism, business performance, efficiency, productivity.

1. INTRODUCTION

The emergence and development of information and telecommunication technologies (ICT) has a considerable impact on economy in general, on a global level, but also on tourism as an economy activity. The impact of ICT has been widely explored in numerous works. Special emphasis is places on theoretical works and explorations dealing with the impact of ICT on business performances, productivity and efficiency of tourism in general and travel agencies. The result of the emergence and development of ICT in tourism means emergence of e-tourism, based on application of ICT, with strong influence on development and changes within operations of this activity. Accordingly, various web tools and applications as well as new website channels for distribution and communication have been developed. The progress and improvement of business performances of tourism companies is associated with ICT development. This paper presents some of the theoretical attitudes related to the emergence and impact of ICT on operations of tourist industry and tourist companies and their business performances.

Besides theoretical positions, certain models of empirical explorations dealing with different problems are developed. Model RE-BP (RE: relationships, enhancement due to ICT, BP: business performance improvements due to ICT) has been developed based on the analysis of two business segments – advancement of relationship between companies within

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distributive channels, under the influence of ICT, and improvement of business performances of the companies under the influence of ICT.

Porter`s model, implemented in tourist industry, points out the need of assessment of changes in competitive position of an actor at the market, taking into account that market changes are happening almost every day, and that they arise under the influence of developed information systems.

Balanced Scorecard (BSC) model is made in order to find an answer related to the measurement of efficacy of different applications uses, so as to define the type of applicable ICT. The necessity of using this model stems from the need to perform the assessment of business results and efficacy, as well as for the more effective strategic determination.

Fuzzy Risk Analysis (FRA) represents a methodological model which basically aims to the assessment of risk for the investment in e-tourism, respecting all basic risk factors that have great impact on the investment determination.

Certain empirical surveys deal with the relationship between acceptance and implementation of ICT and business performances of tourist enterprises and hotels. These surveys aim at pointing out the possible impact of ICT on improvement of hotels` business performances.

Certain differences are notable within positions about the efficacy of implementation of some models that analyse the relationship between investment in ICT and increase of productivity. Thus, on the basis of new methodological postulates, some other models are formulated that deal with this issue. One of those models is Data Envelopment Analysis (DEA), based on nonparametric technique.

2. THEORETICAL-EMPIRICAL ASPECT

ICT play a significant role related to basic changes in tourism, *i.e.* in global transformation of tourist industry. Development of hardware, including various advancements of possibilities for data processing, gives opportunity for solution of many complex issues with computers. This characteristic (Buhalis and O'Connor, 2005) allows organisations to centralize ICT in organizational units, to be able to control the overall organization. At the same time, organisations may leave certain non-core functions to the specialized enterprises that maintain data bases, applications or guide the overall processes. The use of such ICT system leads to improvement of possibilities and increase of flexibility of data processing, which finally allows organization to use its sources in a more profitable and more effective way.

The emergence and implementation of ICT strongly influence basic changes in e-tourism. These changes, arising under the influence of ICT, are oriented to several basic goals: advancement of business activities-processes, increase of profitability, establishment of new business relationships, as well as maintenance of the existing ones. ICT have significant implications within tourism and e-tourism, which results in digitalization of all processes and value chains in tourism, travelling and catering. In that respect, tactically observing things, e-tourism gives possibility to organizations to manage their operations-business processes and to undertake e-trade, eliminating thus intermediaries and boosting their own brand. Strategically, e-tourism makes basic changes within business processes, entire value chain, as well as better strategic relationships with all stakeholders. E-tourism influences competitiveness of organisation in the way that it uses intranet for reorganisation of internal processes, internet for development and effective management of different transactions with confidential partners and internet for interaction with all stakeholders (Buhalis, 2003).

The future of e-tourism is projected with the emergence of ICT and new possibilities they bring. New trends appear at the market, which require new projections of e-tourism, along with structural changes of this industry. Emergence of new possibilities is not the only side of future projections. New possibilities and new chances bring new threats at the markets (Egger and Buhalis, 2008). Changes arising from ICT are not only of technical character. Some of them go deep even into new concepts of management and organisation of tourist industry as well as into the economic entities that make this industry. The structure and activities of management, as well as organisations of tourist economical entities cannot be the same as before the emergence and implementation of ICT. It is necessary to connect this change (Egger and Buhalis, 2008) to the new management innovation, which must be the result of successful implementation of ICT. Innovative management is supposed to constantly deal with the analyses of new development and adoption of new technological solutions, in order to – as these authors point out – increase organizational competitiveness. Also, ICT bring overall transparency at the market, while encouraging consumers to identify, adapt and purchase tourist products.

As the authors state (Egger and Buhalis, 2008), the analysed case studies point out several key trends, visible at the market, with the use of ICT for various purposes.

However, the most important and obvious trends are related to: getting close and interacting dynamically with the customer, managing the extended business value chain and adopting technological innovations as a source of competitive advantage. Each of these trends has specific differentiating features. Emphasizing specificities and features of the observed trends (Egger and Buhalis, 2008) point out that many tourist organisations develop information tools, in order to make direct contact with buyers, eliminating thus intermediaries, and tending to enhance personal brand and win loyalty of the buyers. The authors, furthermore, state, that many case studies, including British Airways, Intercontinental Hotels and Hotel Sallerhof, showed interaction of two related goals: tourist organisations aim to reduce the dependency on intermediaries, through development of personal websites and through loyalty of buyers-consumers, encouraging them to believe that the website is a safe channel for distribution and communication. Costs management aims at using ICT for the decrease of administration and production costs, through integration of internal data bases and processes. Efficacy within the costs decrease is shown in several studies, such as: Enterprise, Intercontinental hotel group and Omena hotels. Technological innovations are practically endless, since few innovations are shown at the market every day. Tourist organisations, therefore, must constantly follow innovative changes, in order to improve their efficacy, capability for direct interaction with the consumers and to increase profitability. Several cases studies record emerging innovations as a significant factor of competitive advantage: Tripvise, Check effect and Finnair (Egger and Buhalis, 2008).

Impact of ICT expansion on tourist industry is visible in creation of stronger competitive environment, whereby these technologies become inevitable factor of development of tourist business and change of business performances of tourist enterprises. In the context of development of business performances, an important position takes development and advancement of performances of tourist distributive channels. However, this field is still not enough explored, although tourist enterprises develop very complex networks of mutual relations, in order to change and improve these relations in accordance with market requirements. It is not clear how ICT influence business performances of tourist enterprises. As (Berné *et al.*, 2015) point out, up to now there is no valid model in literature dealing with tourism, which would explain this relation. Also, besides the fact that there is uneven effect of influence of ICT on different types of tourist enterprises inside distributive channels of tourist services, there are significant gaps in the published surveys. The mentioned authors state that the knowledge about ICT impact on the relationships of enterprises in tourist distributive system and the way these technologies lead to higher or lower levels of business performances are not sufficient, and that new surveys are necessary in order to be able to answer this question. Most of the literature on tourism does not give sufficient valid empirical analyses, and there is no specific formal, reliable framework of the survey. Therefore (Berné *et al.*, 2015), in order to find empirical proofs about the variety of the ways in which relations inside distributive channels and ICT influence the improvement of business performances, it is necessary to include surveys outside the tourism sector. The authors develop RE-BP model, based on the presentation and analysis of two basic elements, shown through the improvement of relationships under the influence of ICT, and improvement of business performances of enterprises under the influence of ICT. Relationships within distributive channels are supposed to be connected to the improvements of two main business segments: market and financial. The first element of the model (RE element) is divided into three segments, as follows: R1-channel relationships with virtual intermediaries, RE2-channel relationships with virtual intermediaries i RE-3: industry relationships. Relevant variable for the first two elements (RE1 and RE2) is intensity, and for the third (RE3) it is number. Business performances are presented with two elements: BP1-market performance and BP2-financial performance. According to empirical surveys based on the presented model, and respecting influence of variables (intensity and number of contacts-relationships within distributive tourist channels) authors conclude that surveys confirm relationship between the increasing use of ICT among intermediaries of the tourism sector, and business performance. Moreover, this relation arises through the increase of the intensity and number of mutual relations of the actors of distributive channels.

Literature as well as theory, for more decades back, have been dominated by the position that tourism sector presents one of the most important sectors for development, even in the developed economies. It has also been emphasized that tourism includes many characteristics of information society, such as globalisation, mobility and abundance of information. Tourist industry is among the first ones to apply information systems (IS) and computer applications, such as: Computer Reservation Systems (CRS) or Global Distribution Systems (GDS). These computer applications were practically the first global, international organisational information systems.

ITC are probably the strongest drivers of change within tourist industry (Werthner and Klein, 1999). Computer Reservation Systems have been developed in air companies, in order to overcome the problem of the increasing number of travellers and to make the relationship between logistics and operational problems more efficient. This application was the first world information application, implemented in the number of companies. At the same time, similar applications were implemented only within the financial sector (Werthner and Klein, 1999).

With the emergence of the Internet, significant changes occured within tourist industry. It is emphasized (Buhalis and Zoge, 2007) that the emergence of the Internet has changed the structure of tourist industry as well as the best operational and strategic practice. Stated authors, using Porter`s model, analyse the impact of Internet on five Porter`s forces and on competitive position of all key actors of the market, as well as the form of tourist industry in such context. The analysis shows the emergence of the Internet intensified rivalry, because it allowed decrease of barriers needed for the entrance at the market. This led to the increase of competitors within the supply, because new competitors at the market had the same conditions as the existing ones, and thus were able to occupy the greatest positions at the market. In the conducted survey, the most emphasized causes that led to the change of factor of impact on competitiveness are transparency of the offering conditions, accessibility of products and prices. Majority of the answers defend the position that the increasing intensity of competitiveness leads to the more obvious price competitiveness, which increases negotiating power of buyers, while, at the same time, decreases negotiating power of suppliers. Also, the majority of the respondents agree that internet led to the more expressed appearance of homogeneous and non-differentiating products, where price competitiveness is predominant, while offer is characterised by similar products. Negotiating power of suppliers is increasing under the influence of internet, taking into account that suppliers have access to the more cost-effective distributive platforms, and that they are in a position to have transparent and direct interaction with buyers, which allows them reduction of costs and better orientation to the prices. In such a way are created conditions where buyers can easier choose the offered alternative. Intern*et al*so allows implementation of wide distributive possibilities, which decrease dependency on intermediaries, decrease costs and increase profits. In this way, conditions for better competitive position of the suppliers are made. Important factor of impact on the negotiating power of the suppliers is also possibility for cooperation, significantly improved through internet. Survey shows that this fact is especially emphasized by hoteliers, who point out that certain internet tools can be used for the grouping of similar or complementary products. This approach leads to the improvement of their negotiating power, since on the basis of created conditions, they can integrate and form unions. It helps suppliers to achieve maximum of efficacy, performance and income, while at the same time avoiding exclusively price competitiveness. As for the negotiating power of buyers, positions of hoteliers of air transporters on one side, and intermediaries on the other side, are different. Hoteliers and air transporters point out that negotiating power of buyers is increasing, while intermediaries state that the power is decreasing. In favour of this statement, it is said that the increase of transparency improved negotiating power of buyers, because transparency increased price competitiveness, decreased barriers for entrance into market and improved variety of offer at the market. Result of the development of the stated conditions is the decrease of loyalty of buyers to certain suppliers, and possibility of easy switch to the supplier who fulfils their requirements, which reduces negotiating power of suppliers, while at the same time negotiating power of buyers is increased. As for danger from substitution, contradictory thoughts are also expressed. Intermediaries emphasize that internet leads to the increased danger from substitution, considering that buyers have possibility of contrasting non travel offerings, and so possibility for preorientation to different products. However, hoteliers and air transporters do not agree that internet leads to the increase of danger from substitution, but, on the contrary, it protects their products against substitution. Reduction of barriers for entrance into the market is the position that everyone supports. Factors of influence have market features, on the basis of internet influence, but very often Government`s policy reduces these barriers for entrance into market, since companies dealing with online-business have tax allowances.

With emergence of ICT different applications are developed, aiming to increase e-tourist business activities. These applications are important because their implementation increases competitive ability of e-tourist business. For each company it is of great importance to define which type of ICT it will use, in order to provide better efficiency and competitiveness. One of the methods and approaches for the measurement of efficiency of use of different applications that may help with identification of certain ICT, with making appropriate business decisions and measurement of business performances of an enterprise is Balanced Scorecard (BSC) model.

According to (Qin *et al.*, 2013) it seems obvious that e-tourism is in the process of evolution, launched by the improvement of ICT, which gives possibility to search for the data and knowledge base, to choose most suitable Web tool technological solutions and to establish accompanying infrastructure. It is at the same time a challenge for future improvements in the business of e-tourism. Authors also emphasize suitability of BSC method in assessment of business results and in more efficient strategic decision-making.

In the case study that the authors analysed, four tourist organisations are selected, whose business performances are measured with implementation of BSC, whereby selected companies represent four different tourism fields, manifestations, attractions, hotels and museums. In methodological context, each case study comprised three parts: business background analysis, information technology application and BSC measurement. Authors conclude their survey with clear statement that tourism as service activity is information intensive activity. This conclusion is based on the fact of existence of great number of individualized interactions with clients, which opens a significant space for implementation of ICT. Number of information in possession of this industry makes basis for analysis and identification of growing trends, which also influences development of innovations. This model, however, is not without defects, *i.e.*, visible defects are close to the statement that BSC is not a suitable model when it comes to the reaction or matrix setting, and also to the assessment of competitiveness.

E-tourism, as part of electronic trade, creates new possibilities for the increase of demand for tourist products and services, and conditions for more efficient management within the tourism sector. Result of application of ICT in tourism is reduction of variable costs, saving of time and increase of self-confidence. Starting with given positions and necessity for constant investment into ICT, in terms of development of e-tourism, authors (Jowkar and Samizadeh, 2011) propose system of support to the decision-making, which, for its basis, has risk analysis, connected to the investments in e-tourism. This analysis - Fuzzy Risk Analysis (FRA) – identifies risks in certain situation and certain region. System of support to decision-making takes into account the most influential risk factors in the context of making investment decisions, it calculates risk factors as recommendation what kind of investment decision should be made. Priority developmental activities of e-tourism are investments, whereby the process of investment decision-making is complex and faced with number of problems. Authors start with a situation that a certain local tourist organisation must decide whether to invest or not, and where to invest, in order to increase the income. One of the main questions is risk analysis within the proposed investment in e-tourism. In the designing phase of the process, the first task of the analyst of the investment risk is to identify the factors that primarily contribute to the risk for the investor in relation to the investment in e-tourist objects. Authors of this model identify four main factors, with elements of structure for each of them as the starting parameters for analysis: available investment amount (governmental, private sector, foreign sector), human skill (educational level, employment level), e-tourism related infrastructure (ICT, tourism, business) and stability (political, human, environmental). In undeveloped countries, main investors in tourism are: Government, private sector and foreign sector. According to survey of the mentioned authors, distribution of participation into investments in tourism is as follows: 50% Government (GI), private sector (PI) 40%, while foreign sector (FI) is in the third place, with participation of 10%. Also, it is considered that Government and private sector will invest 10% each, out of their total investment amount, while foreign sector will invest 5% out of the total investment amount. The following formula is derived on the basis of coefficient from all three investing sectors, in relation to the percentage of total investment available for implementation in e-tourism.

Formula for the first, investment amount factor is:

$$\text{INVESTMENT AMOUNT} = \text{PERCENTAGE OF GI}*5 + \text{PERCENTAGE OF PI}*4 + \text{PERCENTAGE OF FI}*2$$

This formula presents normalized investment amount for e-tourism, with scale from 0 to 1, where 0 means that there are no available investments, and 1 indicates high level of available investments.

Factor human skill is seen by the authors from the position of influence of education and employment rate, whereby these rates are observed in relation to the total population. In the derived formula, 70% of the weight is given to education, and 30% to employment. It is supposed that 50% of people in the examining region are educated, and 30% of the total population is employed. Formula is made on the basis of weighting factor given for both sectors of influence on human skill, in relation to the total population. Coefficient 1.4 with education rate is made by division of education (70%) and percentage of education level (50%), while coefficient 1 with the employment rate is made by division of the percentage

of employment (30%) and percentage of employment in the region (30%).

On the basis of stated postulates, formula for human skill is:

HUMAN SKILL = EDUCATION RATE*1.4 + EMPLOYMENT RATE*1

Formula for the third risk factor, infrastructure, is made out of the formulas for three sectors: tourism infrastructure, ICT infrastructure and business infrastructure:

- formula for tourism infrastructure is:

TOURISM INFRASTRUCTURE = PERCENTAGE OF TOURIST ARRIVAL IN THE TOURIST SITE* NUMBER OF TOURIST SITE + PERCENTAGE OF TOURIST ARRIVAL USE STAR HOTELS*NUMBER OF STAR HOTELS + PERCENTAGE OF TOURIST ARRIVAL USE TOUR AND TRAVEL AGENTS*NUMBER OF TOUR AND TRAVEL AGENTS

- formula for ICT infrastructure is:

ICT INFRASTRUCTURE = 2* NUMBER OF TELEPHONE LINE DISTRIBUTED FOR OPERATION + NUMBER OF COMPUTERS AVAILABLE IN THE REGION*10 + NUMBER OF INTERNET CAFE*500 /TOTAL POPULATION OF THE REGION

In this formula authors start with the premise that one phone is available for 2 persons, one computer is available for 10 persons and one internet cafe for 500 persons.

- formula for business infrastructure is:

BUSINESS INFRASTRUCTURE = PERCENTAGE OF BUSINESS USE IT IN THEIR BUSINESS

Derivative formula for infrastructure is made out of three formulas, within different sectors (tourism infrastructure, ICT infrastructure and business infrastructure), and it is:

INFRASTRUCTURE = VALUE OBTAINED FROM ICT*0.267 + VALUE OBTAINED FROM TOURISM*0.0067 + PERCENTAGE OF BUSINESS USE ICT IN THEIR BUSINESS*1.5

The weighting coefficient 0.267, 0.0067 and 1.5 are determined on the basis of weight given for ICT (0.4) divided by the value obtained for ICT infrastructure (1.4), tourism (0.3) divided by the value obtained for tourism (45) and business (0.3) divided by the value obtained for business (0.2) in their business respectively (Jowkar and Samizadeh, 2011, p. 73).

The fourth factor, stability, authors observe through the effect of three risks that have influence on stability, aiming at destroying stability, and thus we talk about instability and level of instability, under the influence of three risks that are able to destroy stability, *i.e.*, cause instability: political instability (PI), human resource instability (HRI) and environmental instability (EI). Political instability, in premises of the authors, participates with 50% of influence on the increase of risk, human resources 30% and environmental 20%. Political situation and environment play an important role in the future of a nation, and thus it is given to the political instability 50% of the influence, while for human resources and environment it is 25% each.

From the stated premises the following formula is derived:

INSTABILITY = PERCENTAGE OF PI*1 + PERCENTAGE OF HRI-1.2 + PERCENTAGE OF EI*0.8

1, 1.2 and 0.8 are the weights given for political instability, human resource instability and environmental instability divided by the contribution to enhance instability respectively (Jowkar and Samizadeh, 2011, p. 73).

Relation between adoption and implementation of ICT and business hotel performances is subject of analysis that aims at pointing out possible impact of ICT on improvement of business hotel performances. Issue of impact of ICT on improvement of business hotel performances is important because answer to this issue greatly defines future of investment in ICT, as the factor of impact on hotel business. It is well known that ICT have positive impact on hotel business as well as on tourism industry in general. Some of the first international IT applications are developed within tourism industry.

According to (Sirirak *et al.*, 2011), impact of adoption of ICT on business can be observed through relationship between ICT and operational productivity. This relation is explained in the following way: observing adoption of ICT in certain operational fields, then availability and intensity of ICT use in room division (RD), and general ICT integration, a significantly positive relation with operational productivity is visible. Choice of check in/check out system in RD can reduce paper costs as well as number of employees. Importance of integration of ICT is seen through possibility of giving information in real time about resources of the hotel material, material costs, availability of hotel rooms *etc.* These information

are useful for supply managers, in order to reduce business expenses with buying material at the lowest prices and for optimally needed amount. More intensive use of ICT leads to the increase of operational productivity, because hoteliers, with using room status and housekeeping system, can check and more effectively prepare rooms for buyers. Result of this way of operation is increase in capability of staff to manage more rooms with the same number of employees, which, at the same time, leads to the better operational productivity. Authors emphasize that the study analyses impact of adoption of ICT on hotel performances from the perspective of operational business, but also from the perspective of the buyer. Observing impact of ICT from both perspectives, it may be concluded that adoption of ICT has positive impact on operational productivity, while intensity of ICT use has positive impact on buyers` satisfaction. Both factors, operational productivity and buyers` satisfaction should be observed together by hotel management, because hotels, in general, do not observe only operational efficiency, but also creation of long-term relationships with buyers, and credibility of the hotel. In general, authors (Sirirak *et al.*, 2011) conclude that adoption of ICT has positive impact on improvement of business performances of the hotel, but still, specificities of the researched location should be taken into account, as well as the fact that the survey is based on three stars hotels.

With regard to the position that increase of investment in ICT is in relation to the increase of productivity, there is no consensus. Different opinions are expressed by some authors (Sigala *et al.*, 2004), who state that, in spite of the increase of investments in ICT in tourism industry, empirical studies do not persuasively show relation between increase of investments in ICT and increase of productivity. Observed methodological defects in previous studies and applied methodologies require new methodological solutions within assessment of productivity. Framework for the measurement of productivity of ICT investments should be based on Data Envelopment Analysis (DEA). Results of this analysis are supposed to give so-called ICT productivity paradox, *i.e.* theoretical and practical basis for exploitation and management of ICT possibilities. Methodology of this analysis is based on nonparametric technique, whose importance is ever growing in academic as well as in management circles. Study comprises three stars hotels in the UK.

Authors of the study (Sigala *et al.*, 2004) emphasize that the results of the survey of the impact of productivity show that this impact becomes obvious only after analysis of exploitation of the network/integration, informational and transformational capabilities. Optimisation of business values requires more of strategic approach in implementation and management of ICT. Especially three capabilities (information, systems integration and architecture) must be adapted and managed in accordance with business strategy and business operations. Without neglecting the results, this study, based on DEA methodology, has certain limitations, observed in requirement for more precise incoming indicators. The study used data about the permanently and temporarily employed, though number of the permanently employed could represent incoming indicator. Authors (Sigala *et al.*, 2004) emphasize that future studies, based on different statistical analyses, should explore productivity paradox and compare given results. Future studies should try to develop better indicators for qualitative dimensions (eg. satisfaction of buyers and skill of the employees); DEA should also be used to examine potential effects. This suggestion is based on the fact that DEA can deal with qualitative indicators, because it gives number of possibilities for redefinition of service productivity and solution for some problems within the measurement of this productivity.

3. CONCLUSION

Emergence and development of ICT led to the revolution within development and way of operation in tourist industry. Impact of ICT on business and improvement of business performances of tourism and touristic enterprises is observed as highly intensive. Changes are seen through emergence of e-tourism, as a new and advanced touristic activity. Essential business changes are introduced also into business processes, entire value chain and strategic relations with all stakeholders. Development and implementation of ICT allow tourism industry to be one of the first activities to introduce international information systems CRS and GDS that led to the more efficient business, better direct interaction between tourist organizations and buyers, along with the reduction of costs and increase of productivity. Future projection of e-tourism is in close relationship with the development of ICT and possibilities available to the users of ICT. ICT changes, however, go deep into management changes, creating new managing concepts, and emphasizing new requirements for management innovativeness.

Empirical researches, based on certain models and methodologies, have different character, efficiency and scope. There is no consensus about certain models and given results. One of the main issues that empirical

researches deal with is impact of ICT on improvement of business performances. Some researchers emphasize that it is still not clear how ICT influence business performances of tourism enterprises.

One of the models, developed on this thesis, is RE-BP model, which broadens the field of research to the improvement of total relationships among tourism enterprises in distributive channels, under the influence of ICT, and to the improvement of business performances of the enterprises, under the influence of ICT. This model, with spreading out of the limited circle of influence of ICT on the improvement of business performances, allows conclusion that the researches confirmed relationship between more intensive use of ICT and improvement of business performances.

Porter's model showed that it is not possible to talk about the increase of only one`s side negotiating power: buyers or suppliers. Studies on the basis of this model showed that competitiveness as well as negotiating power of the supplier increase, since application of ICT allows more effective costs management, and thus there is no reason to be oriented exclusively to price competitiveness. Negotiating power of buyers increases among stronger competitiveness of suppliers, and competitiveness boosts since the development of ICT erases barriers for entrance of the new suppliers into the market. In this situation, negotiating power of the suppliers decreases.

Development of BSC model followed the development of ICT and new applications. Implementation of new applications aims at increasing business efficiency and business performances of tourist enterprises. Study which dealt with the problem of measurement of business performances with application of BSC model, offers conclusion that tourism presents information intensive activity, and so relation between impact of ICT and improvement of business performances of tourism enterprises is obvious, and business performances are measurable with implementation of this model.

Fuzzy Risk Analysis is a developed model, which comprises risk analysis in relation to the future investments in e-tourism. Role of the analyst in the first phase of making investment decision is to detect certain investment risks for the investor, related to the investment in e-objects. This analysis is based on four basic elements, out of which derivative formulas are made, for each element separately and on the basis of internal structure. Basic elements of this model are: available investment amount (governmental, private sector, foreign sector), human skill (educational level, employment level), e-tourism related infrastructure (ICT, tourism, business) and stability (political, human, environmental). Each of these elements has its own internal structure, and formula is made for each segment of the structure. This complex model widely encompasses elements and factors of the investment risk, which makes it complicated but, at the same time comprehensive, and, on the basis of precise analysis, also in a certain degree precise and objective.

Issue of impact of ICT on operational productivity is one of the more important issues, and it is subject of empirical researches. Certain researches emphasize visible positive relation between development of ICT and increase of productivity, proving this thesis by pointing out the use of different ICT systems, which finally leads to better management of the existing capacities, with lesser number of employees.

There is no consensus in relation to this thesis, and even models dealing with relation between wider implementation of ICT and increase of productivity are questionable. Objections to these models are that they do not use adequate incoming indicators, especially at a qualitative level. This defect, to a certain degree, is corrected by DEA model, which insists on nonparametric technique, and which is more and more acceptable model within academic as well as within management circles.

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