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Representing a Conceptual Frame for Examining the Role and Applications of Decision Supporting Systems in E-Tourism in Iran

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Abstract

A huge amount of websites in developing and developed countries about tourism reveal the importance of it in the present world. IT technology in e-tourism has become prevalent in those countries as well. However, in some scholars' ideas, for the lack of proper investment in this field, this phenomenon is in its primary stages yet. This study aims to examine and represent a model for examining the place of information and decision-supporting systems in e-tourism of Iran. For this purpose, first previous models of such systems are investigated; then, a conceptual model of information supporting systems in e-tourism will be represented.

Keywords: information system, decision-making supporting systems, tourism industry, developing countries.

Introduction

Tourism consists of a wide range of information including a chain of service providers, markets, managers and customers. Information-based nature of tourism and web world advances has changed e-tourism into a platform for developing e-tourism (Daramola 2009). Fast growth of technologies and web applications in previous years, has encouraged business and public sections to adopt with the models and

processes of e-trade. Significant features in e-trade like global markets, 24-hour access during week days, fast responsiveness, completive pricing, multimedia information, active research and negotiation process, personalized services, and innovative services /products have revolved all the sections in the societies, mostly in e-tourism. This issue necessitates adoption with internet strategies and technologies (Hjalager 2002, Connell and Reynolds 1999, Palmer et al 2000). In such conditions, developing new forms of products, services, and processes is necessary for all cooperators in the supply chain of e-tourism to succeed in the existing competitive markets and yield consistent profitability. Finally, the growth of innovative trends related to e-trade makes the need to spread information for decision-makings on searching processes, hotel reservation, and selection more important. Pühretmair et al (2002) described the need to develop information systems in e-tourism for the wide support of decision-makings in trip plans as very important. Decision-making supporting systems help increasing market share, profitability and quality cost decrease (Tripathi 2011). This is while previous studies focus on the subjects like IT applications for management planning and few have dealt with decision-making supporting systems in e-tourism (Loban 1997, Pühretmair et al 20002, Yu 2002). Buhalis and Lokita (2002) stated that e-tourism is in its primary development stages. But, soon it becomes one of the fast-growing on-line industries. In relation with e-tourism, it is predicted that it will be able to meet customer needs in the shortest time with the highest quality (Buhalis et al 2002). In general, the relation between IT and tourism leads to the idea of mixing them in some cases. In fact, tourism companies are among the pioneers resorting to IT capabilities for analyzing data (Baggio et al 2005). This study tries to represent a conceptual framework for examining the position and applications of decision-making supporting system in e-tourism. For this aim, first previous studies on e-tourism decision-supporting systems will be reviewed; then, a conceptual model will be represented.

Decision-making concepts and theories

In general, 2 scientific views of formal and descriptive approaches exist for decision-making. In formal decision-making theories, rationalists look for making optimum decisions, while descriptors or behavioral theoreticians examine people behavior. In rational decisions theory, decision-making is divided into a 3-stage process of intelligence, design, and selection (Simon 2000). Performance is also the fourth stage of it. In political decision-making theory, decision-makers look for finding a satisfactory solution; there are no optimum goals, but competition and political relations lead to decision-making. In most supporting systems, the focus is on the design or selection but intelligence is less supported (Datta 1999). From the other hand, Stohr et al (1992) have divided decision-making in 5 stages including finding problem, problem representation, information search, and solution finding, and evaluating solution. In this view, finding and representing problem is like intelligence stage in Turban theory and information search refers to the design and production stage and solution evaluation refers to selection and performance stage. Generally, developing and improving decision-supporting systems are based on posed decision-making models. Significant elements in decision-making models include preferences to decision goals, existing options for decision, and measuring non-confidence about decision-makings and their consequences. In this way, preference refers to the fact that all results and consequences are not equally important; so, it is decision-maker' s duty to rank them based on his favor (for example, from more

income to less income) and quantify them, especially, if the consequences of a decision are regarded as multiple features needing comparison with a common criteria. Common options which refer to continuous values of organizational policies' variables (like raw material in warehouse) are the second important elements in decision-making models. Third element is non-confidence as a natural knowledge feature resulting from insufficient and careless information. The important point here is differentiating between good decisions and results, implying that a good decision can yield a bad result and vice versa. So, supporting decisions refers to supporting processes for making good decisions with good results (Druzdzel et al 2002).

Knowledge

Knowledge is an important aspect of decision-making and expertise. From organizational view, knowledge has a content and activity nature and knowledge creation can be regarded as an organizational process. Scientific and experimental knowledge both impress decision-making. Scientific knowledge deals with deep understanding of scientific principals and basic relations, explaining natural phenomena while, experimental knowledge involves guide lines and in the situation occasions. In general, in decision-making, both scientific and experimental knowledge are interwoven. Then, when scientific knowledge can't solve the problems, experimental knowledge does it by simulating them and reasoning. In this state, scientific knowledge helps to understand the extent to which experimental knowledge can simulate the problem. Knowledge can also be divided into tacit or explicit types. Tacit knowledge refers to the skills and knowledge that has been operationalized to a specific level, besides relying on much explanation (Nykänen et al 2000). Explicit knowledge refers to the facts and items with explanation capability like things verbally correlated. It is also called codified knowledge and can be marked in formal language (Polanyi 1966). Tacit knowledge is personal and practical with technical and cognitive elements. Besides, Polanyi (1966) differentiated between focal and tacit knowledge. Focal knowledge focuses on necessary explanations in relation with a phenomenon and tacit knowledge is used for such focus. Since knowledge is a basis for decision-making in every arena, above explanations were given. From this view, 3 groups of tacit, explicit, and focal knowledge can be classified.

Supporting systems from decisions, definitions, and concepts

Decision-making supporting systems are important information system in different industries (Dennis et al. 2003, Turban et al. 1986), focused on supporting and improving decisions in information systems (Arnott et al. 2008). They are based on computer, designed in a way to help managers to choose an alternative for solving the problems (Tripathi 2011). Such systems can be a good tool for tourism managers to select proper policies for substructure development in e-tourism (Baggio et al 2005) .They are also flexible and adoptable and use decision-making models and rules; while, the model uses database and decision maker 's view is effective in designing an executive and effective model (Tripathi 2011). From the other hand, intangible nature of tourism products has highlighted the role of information systems for this industry (Baggio et al 2005). Poon (1993) also stated that foe some activities like data gathering, processing, and producing up-date information is valuable. These activities mostly exist in e-

tourism and should be properly managed. Many researchers mentioned advantages for decision-supporting systems like supporting all decision-making stages such as intelligence, design, choice, execution, and control. They can be repetitive semi-structural or unstructured (Tripathi 2011). Elements of decision-making supporting system can be of internal and external types as shown in Fig. 1.

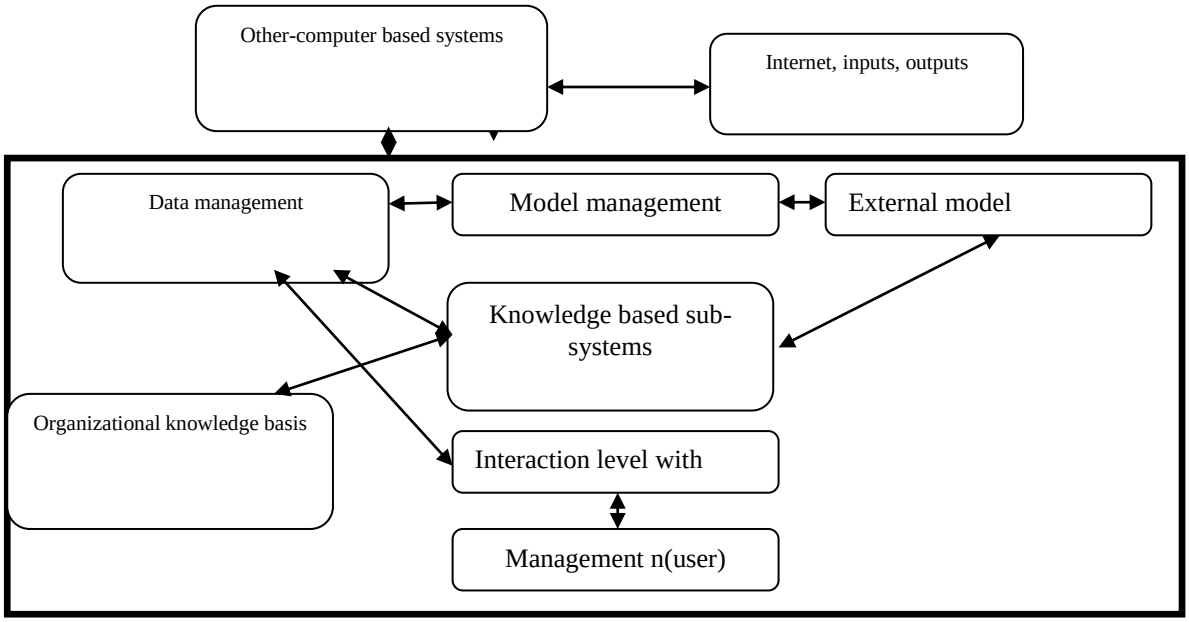


Fig.1 .decision-supporting system elements (Trepasi 2011)

In Fig. 1, knowledge based sub-systems include data bases consisting of related data with present situation managed by software called data base management. They interconnect with warehouse data to support company decisions (Druzdzel 2002). Third element of this system called knowledge-based subsystem supports all other subsystems. It also acts like a big knowledge warehouse called organizational knowledge database. Finally, interaction level with user provides the chance of interaction for information acquiring. It needs two capabilities: performance language which sends issued order to support system, selecting needed data for decision making, and a language transferring made decisions to the user (Jowkar 2011).

Different decision supporting systems

Software engineering, database management, management information systems, decision supporting system, performance investigation, technical/social view, internationalist view, professional lecture and activity-based view focus on specific topic. For example engineering school focuses on software and engineering programs (Bansler 1989, Nykänen 2000). In many scholars' idea, like Turban

(1986) decision supporting systems are considered the most important information system and deal with the problems the users face. The most important source of problems lies in the effects of system issues, negative or positive on work place, organization, and employees that have not been regarded. In fact such systems try to develop guidelines for designing and performing systems supporting decision-making. It is made of decisions for managing dialogue, data, models and knowledge. Generally, in a situation in which all decision-making stages are structured or automatic, decision-making systems are used. A semi-structured problem refers to the situation in which one or more stages of designing, intelligence, and selection has been planned (Simon 2000). In the situations in which semi-structured or unstructured situations occur, decision-supporting systems are needed. Table 1 shows a designed frame of Morton for decision-supporting systems.

Table 1. Designed frame of Morton for decision-supporting systems

	Management control strategic planning of operational control
structured	Decision-making system
semi- structured	Decision-making system
un structured	Decision-making system

Lately, two new decision-making systems have been added one of which is designed for supporting executive and top managers in the organization called EIS system. The second is GDSS designed for supporting group decision-makings and can be used for supporting big management groups in different work nets (Powell et al 1995). Also, Aronett et al (2007) mentioned 8 main sub-fields for decision-making supporting systems. The first case is decision-making supporting system for specific decisions designed in small size for a manager or a group of managers. Group decision-making supporting system use a set of technologies for supporting decisions and communication to support efficient group work. Negotiation supporting system focus on negotiation processes between different groups. The fourth case is management –based knowledge system focused on knowledge storage, transfer, and applications for managers. Data warehouses are the systems which provide much data for decision-making for the people, making the 7th sub field of decision-making supporting systems. Finally, institutional reporting and analyzing systems focus on business intelligence and management executive systems. These 8 subfields are subsidiary activities and systems under the broad title of decision-making supporting system.

In another classification, 8 groups are regarded. Data based and model based systems, referring to searching data and expert systems, document-based systems, inter-organizational systems, group systems and specific performance based systems referring to web usages for special purposes (Tripasi 2011).Proper adoption of issue type and its supporting system is the most important point in this case. The point is that decision-making supporting system s focus more on selection stage and less on

intelligence and design is always criticized. Such people believe that communication should be regarded as the most important element in those systems.

Key design factors of a decision-making supporting system

In previous literature, different factors have been mentioned for designing a decision-making supporting system. Arnott et al (2008) studied various portals to conclude that a key in successful design of an information supporting system is that the researches around it are coordinated with performed operations for decision-making supporting system. Agarwal et al (2005) and Benbasat et al (2003) expressed their worry about the gap between the researches and operational area. So, for success, operational and research areas should match together. Also, research methods and system design paradigms should be coordinated. Arnott et al (2008) found that most studies on decision-making supporting systems have used positive paradigms rather than interpretive approach; while the studies about database and institutional reporting have had interpretive orientation. New paradigms in this field should also be regarded. Third, theoretic foundations for those systems should be regarded. Fourth, IT needs to be used for this purpose. As Benbasat et al (2003) mentioned, all studies around information systems should relate to IT.

Tourism and e-tourism

Tourism is an industry changing for IT and communication technologies (Stiakakis et al 2011, Alipour et al 2011). It is a multidisciplinary industry attracting many people, but complicating it from planning aspects (Ibrahim 2009). In this industry products are not manufactured directly but represent broad and significant services to the people. Various industries like food and transportation are involved. It is a complementary industry known for doing economical/ social activities like attracting people to destination, transferring people, feeding and accommodating them. In 2001 in England, there were 400 million of transfers, reaching 520 million in 2003 and it is predicted to rise to 720 million people in 2022 (Price 2006). Tourism applications in employment development and helping GDP by tourism report in 2012 of OPEC are shown in charts 1 and 2.

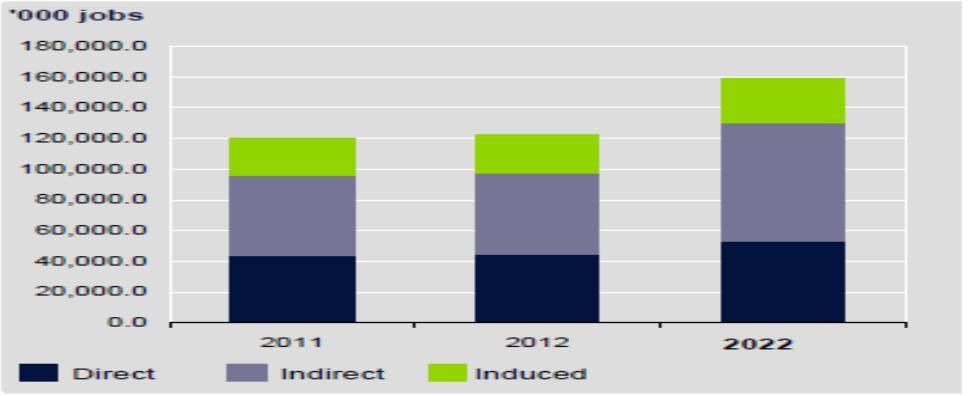


Chart 1. Tourism proportion in increasing employment and OPEC prediction till 2022

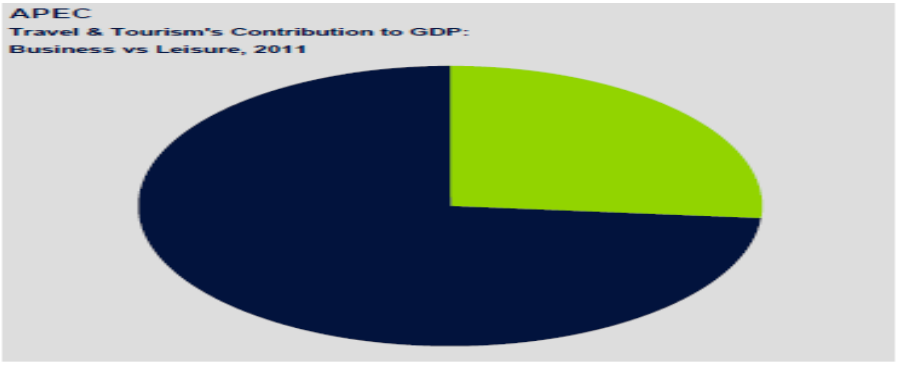


Chart 2. Tourism help to GDP increase

Chart 2 shows that travel in 2011 makes 73.7 % of tourism GDP. 26.3% of it comes from business trips (OPEC reports). So, by IT advances, the trend of mixing physical and information products is an important concern of tourism industry. Tahayori et al (2006) and Andersen et al (2006) believe that since the nature of provided services by tourism is not physical, the ways of describing and showing products in the websites highly affect people. From the other hand, people have to be transferred to other places to gain experience or test their purchase. Lack of access to internet inhibits providing top services and competition in global area (Pimenidis 2006). So, IT growth helped tourism development (Stiakakis et al 2011). In this environment, Internet plays the roles of communication and information gathering for recognizing target markets (Alipour et al 2011).Enough knowledge of target markets is the key to the success of tourism companies. Finally, Buhalis (2008) introduced e-tourism as a digitalizing process of all value-chain processes, tourism and hospitals. In tactic level, this trend includes e-trade using IT FOR maximizing tourism organization efficiency. In strategic level, e-tourism revolves all trade processes and chain values like relations with other stock holders. E-tourism is an innovative concept in tourism resulting from 3 sections of business, tourism and IT technologies. In fact, developing these 3 sections leads to developing e-tourism (Fig. 1.).Tourism development depends on development, investment, and budget allocation in these 3 sections.

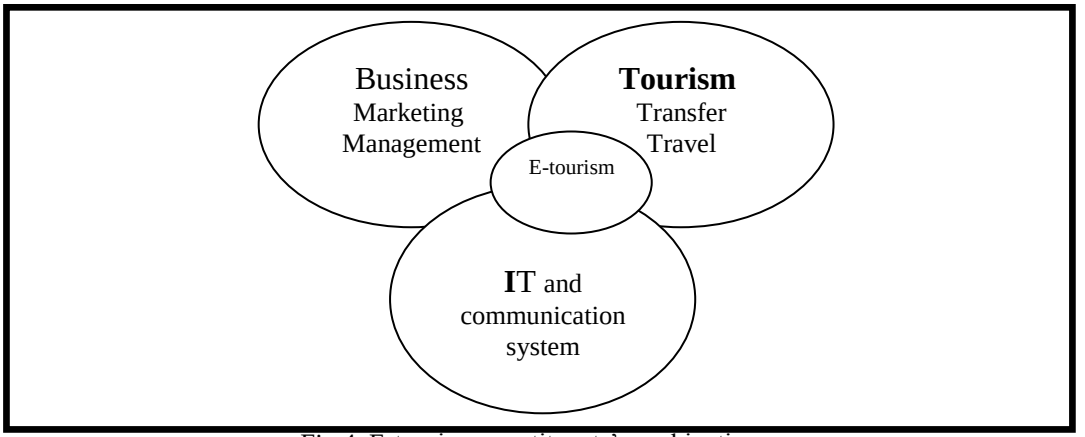


Fig 4. E-tourism constituents' combination

Tourism in Iran

Tourism has an important role in developing countries for raising employment extent and foreign income. It supports 195 million jobs in the world (Cooper et al 2005); while the proportion of global income from tourist reaches 733 billion $ in 2006, according to UNWTO, Iran's share from that income is only 585.7 million $. He also predicts a descending level for it in 2012. Based on Saddad (2009), most concerns in tourism institutes in Iran should focus on website designs and relation management with the customers. But, travel agencies number equipped with websites is few. So, regarding IT technologies in tourism and providing necessary backgrounds for its development in Iran seems essential.

Decision supporting system applications in e-tourism

Tourism is an industry based on broad information and long value chain (Henriksson 2005).Improper adoption of tourism and IT leads to many challenges and threats in this area (Pimendis et Al 2006). In e-tourism studies related to the contents include IT adoption and communication strategies, marketing analysis, business performance, and customer satisfaction (Cai et al 2004, Frew 2000, Liu et al 2004, Seddighi et al 2002).The reason for this can be potential opportunities provided by IT (Daramola 2009). But little study has been done in personalizing services and decision supporting systems (Loban 1997, Stamboulis 2003) .This is while information –based nature of e-tourism and web growth has changed e-tourism into a platform for improving tourism (Daramola 2009). Table 2 refers to some researches in relation with information system applications.

Table 2. Some studies around the role of information systems in e-tourism

row	author	year	explanations
1	Yu	2005	This study designed a conceptual framework for IT system applications and decision support in e-tourism to personalize represented decisions and services.
2	Baggio et al.	2005	This study examined the applications and role of IT system applications and decision support in e-tourism to provide a conceptual frame.
3	Tripasi	2011	In this study decision support systems are recognized as key tools for making better decisions in organizations that depends on information quality. Computer-based systems also make information processing more effective.
4	Daramola	2009	This study examines IT systems expansion in e-tourism. From 4 technical aspects including production line, ontology, range and application engineering, it studied tourism information systems and offered a conceptual model for 3 south African countries.
5	Scarel et al .	2001	This study tried to design a new picture of e-trade applications in different sections of tourism. So, various e-trades were examined. Finally, with case studies, each e-trade matched with applications in different sections, offering a

			conceptual model.
6	Stiakakis et al	2009	This study tried to find good strategies for e-marketing in e-tourism. For this purpose, 3 sections of product personalizing, information share, operational data proportion were studied. Drives for good strategies included relation management with customers, supply chain management, IT- based applications.
7	Paidel et al .	2006	This study examines the reasons of low e-tourism growth and problems in developing countries. They introduced investment as the main problem in those countries.

The main goal of decision supporting systems is providing on-line information and supporting decisions in e-tourism (Henriksson et al 2006). In a real process of decision-making, different people express their ideas about the issue, trying to convince the others. According to Liu et al (2005), 3 issues should be regarded. First, people role (weight) in decision making should be clarified. In fact there may be leaders with deep effects on the others that can change discussion direction to their benefit. Second factor is people's preferences to decision-making alternatives. There is this probability that group members are not aware of the issue or can't recognize te relations well. So, different people with different perceptions from a similar issue are important to be remembered. Third factor for examining an issue finding good criteria based on prioritizing the multiple goals of the decisions. To examine these 3 factors and support group decisions in tourism, group decision supporting systems are regarded (Shim et al 2002) in different management levels (long et al 1999). It supports group communication focusing on 3 factors of time, space, and group support level. Without it, group decisions can be made by face to face communication (Baggio et al 2009). According to Stiakakis et al (2011), the most important factor in e-tourism is marketing for selling products and services, selling products to final customer, internal or external operations, managing working human resource, and buying raw material and finding a good supplier. Yu (2005) showed that decision supporting systems have a great role in personalizing services and e-tourism products. Table 3 shows the studies examining the applications of decision supporting systems in tourist.

Table3. The studies examining the applications of decision supporting systems in tourism

row	Application	author	year
1	Decision support	Baggio. R & Caporalo.L. Stiakakis. E & Georgiadis. C.K. Paudel, B. Hossain, M.A	2005 2009 2006
2	Market share increase	Treepasi.N	2011
3	Better darta regulation facing a complicated problem.	Baggio. R & Caporalo.L. Jowkar. Z, Samizadeh.R.	2005 2011
4	Cost decrease	Jowkar. Z, Samizadeh.R.	2011
5	Facilitating finding destination	Baggio. R & Caporalo.L.	2005

6	Service personalizing	Lu, J., Yao, J. E., & Yu, C.	2005
7	Providing needed information for the customers	Paudel, B. Hossain, M.A	2006
8	Coordination increase	Liu. S. Q	2005

As seen in Table 3, researchers have referred to many applications of decision-supporting system with different titles. Baggio et al (2009) refer to decision-supporting system as the access to all policies and data related to a decision. Such study was done to design a conceptual frame for identifying the position and applications of decision-supporting systems in e-tourism. For this purpose, the conceptual frame of this study is shown in Fig. 3.

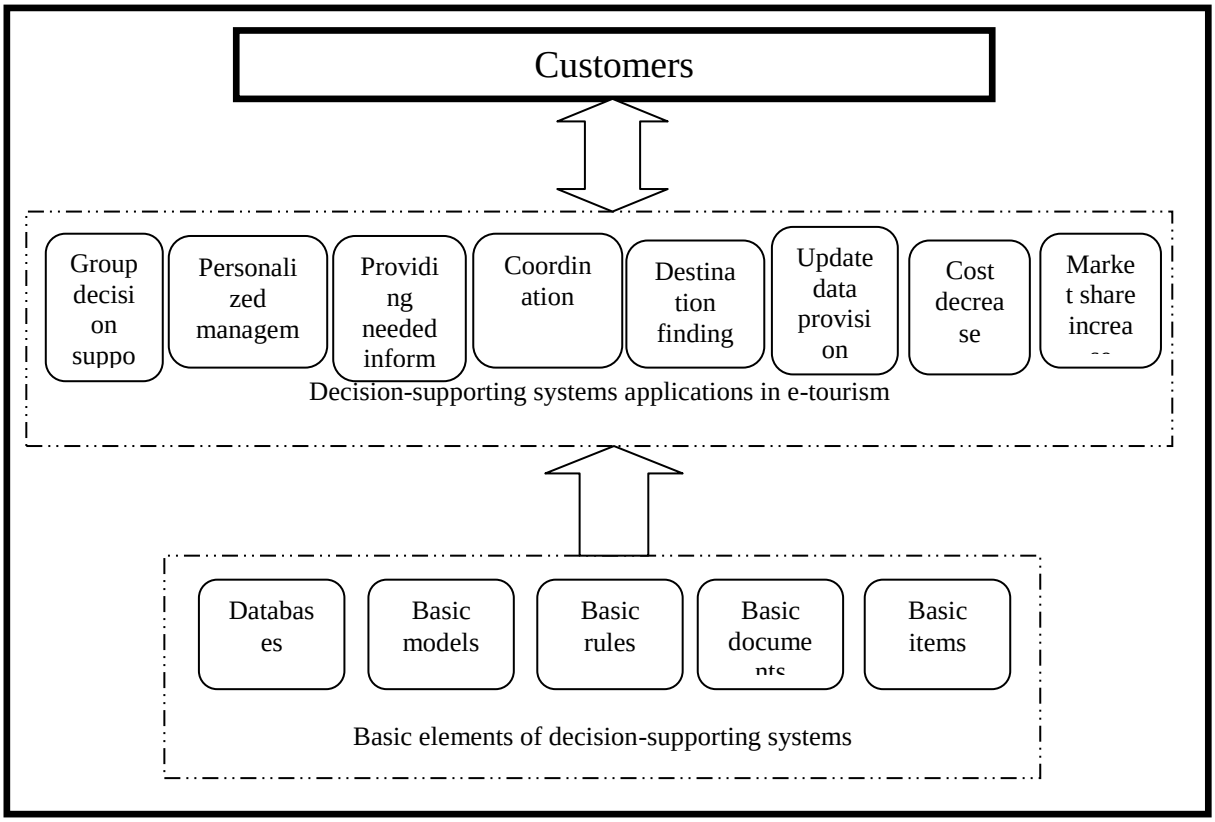


Fig.3. Conceptual frame of the position and applications of decision-supporting system

Conclusion

Based on the report of organization of economic cooperation development (OECD), tourism is one of the biggest and the most dynamic industries in member countries (liu 2005). In the second half of the present century, it has changed into the most important activity in global arena. IT and communication technologies play a great role for this industry. Significant growth of e-tourism also has had a great impact on GDP and income growth of the countries, highlighting the importance of personalizing the services and decision supporting systems in tourism. This paper tried to review the related studies of information and decision-making supporting systems application in tourism industry to provide a conceptual frame for identifying the position and applications of decision-making supporting systems in e-tourism of Iran. So, related concepts and applications mentioned by researchers in literature were examined and discussed. Then tourism and e- tourism were defined and a conceptual frame was represented.

References

[1]. Agarwal, R., & Lucas Jr, H. C. (2005). The information systems identity crisis: Focusing on high-visibility and high-impact research. *MIS quarterly*, 381-398.
[2]. Alipour, M., Hajaliakbari, F., & Javanbakht, N. (2011). The Impact of Web-Marketing Mix (4s) on Development of Tourism Industry in Iran. *International Journal of Business and Social Science*, *2*(6), 267-274.
[3]. Andersen, K. V., & Henriksen, H. Z. (2006). Impact Analysis of E-tourism in Bhutan. *Workingpaper serie*, 09-2006.
[4]. Arnott, D., & Pervan, G. (2005). A critical analysis of decision support systems research. *Journal of information technology*, *20*(2), 67-87.
[5]. Arnott, D., & Pervan, G. (2008). Eight key issues for the decision support systems discipline. *Decision Support Systems*, *44*(3), 657-672.
[6]. Baggio, R., & Antonioli Corigliano, M. (2009). On the importance of hyperlinks: A network science approach. *Information and Communication Technologies in Tourism 2009*, 309-318.
[7]. Baggio, R., & Caporarello, L. (2005). Decision support systems in a tourism destination: literature survey and model building. In *U: Proceedings itAIS-2nd Conference of the Italian chapter of AIS (Association for Information Systems). Verona, Italy*.
[8]. Bansler, J. (1989). Systems development research in Scandinavia: three theoretical schools. *Scandinavian Journal of Information Systems*, *1*(9), 3-20.
[9]. Benbasat, I., & Zmud, R. W. (2003). The identity crisis within the IS discipline: Defining and communicating the discipline's core properties. *MIS quarterly*, 183-194.
[10]. 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*, *29*(4), 609-623.

[11]. Buhalis, D., & Licata, M. C. (2002). The future eTourism intermediaries. *Tourism management*, *23*(3), 207-220.
[12]. Cai, L., Card, J. A., & Cole, S. T. (2004). Content delivery performance of World Wide Web sites of US tour operators focusing on destinations in China. *Tourism Management*, *25*(2), 219-227.
[13]. Connell, J., & Reynolds, P. (1999). The implications of technological developments on Tourist Information Centres. *Tourism Management*, *20*(4), 501-509.
[14]. Daramola, J. O. (2009). A Software Product Line Approach to Ontology-based Recommendations in E-Tourism Systems (Doctoral dissertation, COVENANT UNIVERSITY OTA).
[15]. Datta, A., & Thomas, H. (1999). The cube data model: a conceptual model and algebra for on-line analytical processing in data warehouses. *Decision Support Systems*, *27*(3), 289-301.
[16]. Dennis, A. R., Carte, T. A., & Kelly, G. G. (2003). Breaking the rules: success and failure in groupware-supported business process reengineering. *Decision Support Systems*, *36*(1), 31-47.
[17]. Druzdzel, M. J., & Flynn, R. R. (2002). Encyclopedia of library and information science. *Decision Support Systems, New York*, (2).
[18]. Felfernig, A., Gordea, S., Jannach, D., Teppan, E., & Zanker, M. (2007). A short survey of recommendation technologies in travel and tourism. *OEGAI Journal*, *25*(7), 17-22.
[19]. Frew, A. J. (2000). Information and communications technology research in the travel and tourism domain: Perspective and direction. *Journal of Travel Research*, *39*(2), 136-145.
[20]. Henriksson, R. (2005). Semantic web and e-tourism. *Helsinki University, November*.
[21]. Hjalager, A. M. (2002). Repairing innovation defectiveness in tourism. *Tourism management*, *23*(5), 465-474.
[22]. Ibrahim, Z. (2009). Tourism development and the environment on the Egyptian red sea coast.
[23]. Jowkar, Z., & Samizadeh, R. (2011). Fuzzy Risk Analysis Model for E-tourism Investment. *International Journal of Management and Business Research*, *1*(2), 69-76.
[24]. Lang, K. R., & Whinston, A. B. (1999). A design of a DSS intermediary for electronic markets. *Decision Support Systems*, *25*(3), 181-197.
[25]. Law, R., Leung, K., & Wong, R. (2004). The impact of the Internet on travel agencies. *International Journal of Contemporary Hospitality Management*, *16*(2), 100-107.
[26]. Liu, S. Q. (2005, August). A theoretic discussion of tourism e-commerce. In *Proceedings of the 7th international conference on Electronic commerce* (pp. 1-5). ACM.
[27]. Loban, S. R. (1997). A framework for computer-assisted travel counseling. *Annals of Tourism Research*, *24*(4), 813-834.
[28]. Loban, S. R. (1998). Effective documents for tourist information systems. *Information Technology & Tourism*, *1*(1), 59-71.
[29]. Lu, J., Yao, J. E., & Yu, C. S. (2005). Personal innovativeness, social influences and adoption of wireless Internet services via mobile technology. *The Journal of Strategic Information Systems*, *14*(3), 245-268.
[30]. Nykänen, P. (2000). *Decision support systems from a health informatics perspective*. Tampereen yliopisto.
[31]. Palmer, A., & McCole, P. (2000). The role of electronic commerce in creating virtual tourism destination marketing organisations. *International Journal of Contemporary Hospitality Management*, *12*(3), 198-204.

[32]. Paudel, B., & Hossain, M. A. (2008). ETourism INVESTMENT DECISION MAKING SUPPORT SYSTEM. *School of Informatics, University of Bradford, Bradford BD7 1DP, UK*.

[33]. Pimenidis, E., Bolissian, J. M., Iliadis, L., & Andreopoulou, Z. (2006). E-Readiness or digital exclusion—proposing a new evaluation framework. In *Proceedings of the 2nd e-democracy national conference with international participation. Athens, Greece*.

[34]. Polanyi, M. (1966). The logic of tacit inference. *Philosophy*, *41*(155), 1-18.

[35]. Poon, A. (1993). *Tourism, technology and competitive strategies*. CAB international.

[36]. Powell, P. L., & Johnson, J. E. V. (1995). Gender and DSS design: the research implications. *Decision Support Systems*, *14*(1), 27-58.

[37]. Price, J., & Starkov, M. (2006). Building a blog strategy in hospitality: grow customer relationships and direct online revenue. *Retrieved May*, *9*, 2010.

[38]. Pühretmair, F., Rumetshofer, H., & Schaumlechner, E. (2002). Extended Decision Making in Tourism Information Systems. In *E-Commerce and Web Technologies* (pp. 57-66). Springer Berlin Heidelberg.

[39]. Saddad.G. (2009). E-commerce applications adaption in Tourism in Iran, Master Thesis: 1-257.

[40]. Seddighi, H. R., & Theocharous, A. L. (2002). A model of tourism destination choice: a theoretical and empirical analysis. *Tourism management*, *23*(5), 475-487.

[42]. Simon, H. A., Kalagnanam, J. R., & Druzdzel, M. J. (2000). Performance budget planning: The case of a research university. *Unpublished manuscript*.

[43]. Sprague Jr, R. H., & Carlson, E. D. (1982). *Building effective decision support systems*. Prentice Hall Professional Technical Reference.

[44]. Stamboulis, Y., & Skayannis, P. (2003). Innovation strategies and technology for experience-based tourism. *Tourism management*, *24*(1), 35-43.

[45]. Stiakakis, E., & Georgiadis, C. K. (2011). Drivers of a tourism e-business strategy: the impact of information and communication technologies. *Operational Research*, *11*(2), 149-169.

[46]. Stohr, E. A., & Konsynski, B. R. (1992). Information Systems and Decision Processes (IEEE Computer Society Press Monograph). IEEE Computer Society Press.

[47]. Tahayori, H., & Moharrer, M. (2006). E-tourism: the role of ICT in tourism industry, innovations and challenges.

[48]. Tapscott, D. (1996). *The digital economy: Promise and peril in the age of networked intelligence* (Vol. 1). New York: McGraw-Hill.

[49]. Tapscott, D., Lowy, A., & Ticoll, D. (2000). *Digital capital: Harnessing the power of business webs*. Harvard Business Press.

[50]. Tripathi, K. P. (2011). Decision support system is a tool for making better decisions in the organization. *Indian Journal of Computer Science and Engineering (IJCSE)*, *2*(1), 112-117.

[51]. Turban, E., & Watkins, P. R. (1986). Integrating expert systems and decision support systems. *Mis Quarterly*, 121-136.

[52]. Waman ,S ,& Jawadekar,R. (2007). *Management information systems text and cases* (3rd ed.), Tata McGraw Hill Publishing Company Ltd., New Delhi.

[53]. Werthner, H., & Ricci, F. (2004). E-commerce and tourism. *Communications of the ACM*, *47*(12), 101-105.

[54]. Yu, C. C. (2005, January). Personalized and community decision support in eTourism intermediaries. In *Database and Expert Systems Applications* (pp. 900-909). Springer Berlin Heidelberg.

[55]. Yu, C.C. (2002). Designing a web-based consumer decision support system for tourism services, In *Proceedings of the 4th International Conference on Electronic Commerce*.