

Innovation Systems in Health Tourism

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Abstract—The research problem discussed in the paper is the innovativeness of health tourism. The aim of the study is to identify the specifics of the health tourism innovation systems. The article proposes the concepts of the innovation systems based on a literature review. The theory is confronted with the results of experts and empirical research. The Delphi research were conducted in 2015 with 12 experts participation. The quantitative study was conducted in 2016 on a group of 461 respondents represented by services of health tourism in Poland. The following methods were used: Delphi, a questionnaire, a standardized interview and the ranking method. The research confirmed the proposed concept and showed a relatively small role of more complicated innovation systems (non-linear), such as: open and user driven innovation (UDI). The paper is novel in character, since to date the innovations occurring in health tourism have not been classified and there is no described systems of this innovativeness. The paper fills this gap in both the theory and practice.

Index Terms—Health tourism, innovation, system, tourism.

I. INTRODUCTION

Along with the progress of civilization and the progressive aging of the population, health tourist services are gaining in importance. The tourism sector of a health tourism is a result of the combination of health (medicine) services and the services related to tourist travel.

A group of health tourism was selected for a successive survey. The selection of these enterprises was based on the following premises:

- The need for the survey to address a selected group of service, given the large heterogeneity of the sector;
- The dynamic development of the tourism sector in the last sixty years which was much faster than in the other sectors, as confirmed by the statistical data, which indicate that the number of travels from 1950 to 2012 grew by a factor of almost 40, continues to grow and was over one billion [1];
- The relatively poor exploration of innovation processes in the tourism sector; in particular, on the part of travel agencies, despite their large potential and significant role in economic growth.

As a result of this, there is a growing demand for innovation which is a driver of medical services. The research problem discussed in this paper is health tourism innovativeness process. Health tourism is defined as a type of tourism the main goal of which is to improve or preserve health [2]. The earlier studies by the Author [3] demonstrated that health tourism included: SPA & wellness, aesthetic medicine, health

spa-based tourism and medical tourism. However, researchers do not pay much attention to innovations in tourism. The few publications which can serve as a reference point include the attempts to trace back the research done on this subject matter which were taken by Hjalager [4], OECD [5], Dzedzic [6], or Szymańska's [7], [8] search for manifestations of the innovativeness of tourism enterprises. Because of insufficient research on the innovativeness of tourism enterprises, the implementation of the objectives of the project should be based on innovation theory in economic sciences.

The classical definition of innovation was created in the early 20th century by Joseph Schumpeter [9], for whom innovation was:

- The introduction of new products into production or the improvement of existing products,
- The introduction of a new or improved production technology,
- The use of a new sales or purchase method,
- The opening of a new market of both sales or distribution of output and supply,
- The use of new raw materials or intermediate products,
- The introduction of changes in the organisation of production.

J. Schumpeter's [9] line of thought was continued, *inter alia*, by Rosenberg [10], Drucker [11] and Gault [12].

The core questions for the development of health tourism innovation are as follows: Do the innovative processes present in health tourism create a system or systems? What kind of the innovation system (or systems) are in health tourism?

The point of departure for developing the system is innovation theory and innovation systems (called also: models or processes of innovativeness), particularly their more recent generations, starting with coupling models and ending with *user-driven innovation* models. These issues were considered by other eminent economists, such as P. K. Ahmed [13], P. McGowan [14], S. J. Kline and N. Rosenberg [15], G. Roehrich [16] and P. Hobcraft [17]. Table 1 shows different approaches to the innovation systems.

Initially, the innovation processes were perceived as a simple consequence of change (the market needs or the results of research) – items 1 and 2 in Table I They can be called linear ones. However, S. J. Kline and N. Rosenberg [15] noticed that these processes could be more complex and developed the model of a conjugated innovation process. Later studies were substantially more complex and all of them, starting from the 1990s (item a 5 in Table I), have involved advanced computer technologies. The concept of *open innovation* began a new look at the innovation processes. It enabled the ideas to go outside of the organization and for the latter to be open in the process of creating innovations – this turned out to be a factor which greatly stimulated innovation [7]. The UDI concept was created on this basis. Customers' active participation, even consisting in the co-creation of innovations (new products and services), seems to be the

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optimum option both for the customers who, in the course of the creation process, notify their needs and ideas, and for entrepreneurs who seek to meet these needs, as this enhances their certainty of sales. The researchers show that the concept of the co-creation by customers does not apply only to the creation of innovations, but it can be used, for example, to improve the quality of services [19].

This development of the innovation process research has continued until today, starting from the first stage, covering the 1950s and the first half of the 1960s, when the innovation processes unfolded linearly, through more complicated systems, until the contemporary process which began after 2000 and is characterized by a large focus on knowledge management.

TABLE I: INNOVATION SYSTEMS

No	Systems	Characteristics
1	Science pushed	A linear model of the innovation process <i>pushed by science</i>
2	Pulled by the market	A linear model of the innovation process <i>pulled by the market</i>
3	Conjugated	Interaction models where the connections among the individual elements result from the couplings between science, market and enterprise
4	Integrated and networked	Integrated systems based on networked connections – flexible, based on the system of a response related to the consumer, continuous innovation
5	Information and communication technology	A set of interrelated elements designed to process data using a computer technique. As innovation systems evolve, the role of information and communication technologies grows
6	Self-learning processes (systems)	Focus on the management of knowledge and learning assisted by a set of electronic tools facilitating the current transfer of information and decision-making.
7	Open innovation	The concept is based on the conviction that companies may, and even should, seek ideas and ways of creating innovations, not only within their structures, but also their environment – among external partners (companies, organisations and customers)
8	User driven innovation (UDI)	Demand-based approach to innovation - based on the conviction that consumers (users) have an increasingly large influence on the available commercial offers, participating in the process of creating products and services which they purchase.
9	Diffuse innovation process	Focus on open innovations inside and outside the organisation. Innovation is created (higher value is generated) by establishing an efficient knowledge flow system (inside and outside)

Source: the results of Delphi method, and: E. Szymańska, Construction of the Model of Health Tourism Innovativeness, "Procedia social and behavioral sciences," vol. 213 (2015), pp. 1008-1014, 2015. [18]

II. METHODS

The research task was implemented using the Delphi method, enabling systematization of knowledge and formulation of recommendations. Delphi is a qualitative method combining experts' knowledge and opinions to reach a conscious consensus on a complex problem, which is understood to mean a structured process of group communication designed to ensure the effectiveness of actions taken by a community of independent persons who are

all committed to solving a complex problem [20]. In the literature, many varieties of the Delphi method can be distinguished [21]. In the later research, the classic method was applied. The research process of the expert panel with the use of the Delphi method is based on four foundations and covers:

- A group of participants (experts) selected because of their expertise related to the studied issue;
- The process of multiple interactions (here double), through which the opinions of experts are discovered and a consensus is achieved;
- Feedback applied to participants, the aim of which is interaction and reflection;
- The opinions of experts that contribute to the solution of the given problem.

The paper presents the results of two rounds of a survey using the Delphi method which were conducted in June and July 2015. The study involved 12 experts, scientists and practitioners specializing in the fields of innovation and the economics. The survey made it possible to verify and correct the survey questionnaire prepared using the CAVI method.

The next stage was market research carried out on providers of health services, since it seems that this group of providers should be most interested in comments and suggestions of customers (patients, persons using health resort-specific services). The entities to be examined were selected on the basis of the Polish Classification of Activity (Section Q, Parts 86 and 87; Section Q, Part 86; Section I, Part 55; Section N, Part 79). The whole size of the examined population was determined on the basis of the local data bank (BDL) as consisting of 241,393 entities. The size of the representative sample was calculated using the calculator of the research sample. The following parameters were adopted for the calculation of the size of the examined sample: the confidence level of 0.95, the expected fraction size of 0.5 and the maximum error of 0.05. As a result of the calculations, the minimum sample size was determined as 384 entities. The research material was collected using a survey questionnaire as a tool. The research was carried out from November 2015 to March 2016. Three techniques were applied to collect data: CAWI, PAPI and a telephone interview. The CAWI technique, consisting in Internet-based mailing of electronic survey questionnaires, proved to be hardly effective. Despite the purchase of 35,000 e-mail addresses and the sending out of the link to the questionnaire (placed at the address: ankietka.pl), from 2 November to 31. December 2015 only 51 questionnaires were received. In the light of this, the project implementers decided to use the technique of a telephone interview. Interviews were carried out by trained interviewers who were students of Tourism and Recreation at the Management Faculty of the Bialystok University of Technology, first-degree studies, semester IV. Despite many failures and respondents' hostility, the students demonstrated great determination and effectiveness. Ultimately, as a result of the research (with a simple random selection, taking into account the number of entities in particular provinces) carried out from November 2015 to 2016, questionnaires were collected from 461 entities. The interviewers used both tools: a questionnaire in the form of a paper and pencil interview (PAPI) which they filled in during the interview, and the CAWI questionnaire which they filled in after the conversation.

III. RESEARCH RESULTS

The innovativeness models proposed as the research these were designed on the basis of the considerations reported in the literature which were described in the Introduction. As a result of these considerations, 9 different models of innovativeness systems were developed. They are presented in the Table in the order in which they appeared in the economic literature (innovation theory, from in the 1950s (linear systems) to the last decade (UDI and diffuse systems). For the enterprises of health tourism, thesis were proposed concerning the particular innovativeness processes. The Table shows the results of the research in the form of an average number of indications in both of the Delphi and quantitative research.

TABLE II: CHARACTERISTICS OF MODELS OF INNOVATION SYSTEMS AND DELPHI RESULTS (RESULTS OF ROUND I/RESULTS OF ROUND II) AND QUESTIONNAIRE SURVEY RESULTS

Systems	Results of two rounds of the Delphi poll	Results of the questionnaire survey
Science pushed	7/5=12	63
Pulled by the market	11/9=20	152
Conjugated	9/5=14	69
Integrated and networked systems	6/6=12	52
Information technology systems and information and communication technology systems	2/0=2	30
Self-learning systems	4/2=6	0
Open innovations	15/6=21	34
User driven innovation (UDI)	6/3=9	46
Diffuse (spread) innovation	3/0=3	13
No system or model		102

Source: own elaboration based on the research and E. Szymańska, Construction of the Model of Health Tourism Innovativeness, "Procedia Social and Behavioral Sciences", 213 (2015), pp 1008-1014. [18]

Table II shows the results of two types of research: qualitative and quantitative ones. The beginning of the results were presented by E. Szymańska [18]. The experts indicated the open innovation model as the one which is the most desirable for the innovativeness of providers of health tourism services. They assigned 21 indications to this model. This is a modern, progressive model which is conducive to innovation. However, the results of quantitative research are contradictory with the experts' opinions. Only few enterprises (34, i.e. 7% of the respondents) indicated the use of the open model. The largest number of respondents, representing 33% (152 entities) indicated a linear, market-pulled innovation process. Many entities (22%) declared that they did not use any innovation system or model. A much smaller group of respondents indicated the conjugated model (69 respondents, representing 15%) and the science-pushed model (63 respondents, i.e. 14%). It should be noted that the higher the generation of the model (the more interactive and open to the

environment the model is), the fewer respondents' indications it gets. The *diffuse innovation* system took the last position.

The results of the performed qualitative and quantitative research, it should be recognised that the results of the two types of research are very different. In the experts' opinion, each of the forms of this tourism operates in a different innovation system to which different models correspond, but the open innovation model, described by H. Chesbrough [2] is most suitable for the innovation processes in health tourism. Figure 1 shows the open innovation system (model) indicated by experts as the most important in the innovation process realised by the health tourism enterprises.

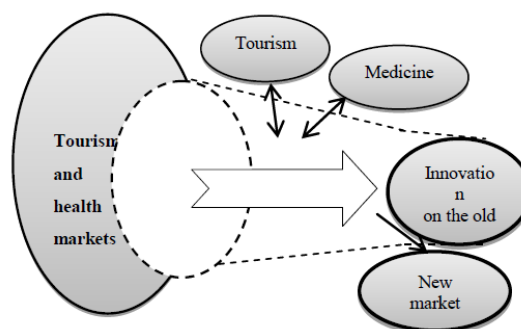


Fig. 1. The innovativeness system model suggested by experts in Delphi research (*open and pulled by the market*)

Source: Delphi research based on: H. Chesbrough, *Open innovation. The New imperative for creating and profiting from technology*, Harvard Business School Press, Boston, 2003. [22]

A direct reference to one of the innovation system models was found for medical tourism. The entrepreneurs indicated the market-pulled innovation process model, shown in Fig. 2.

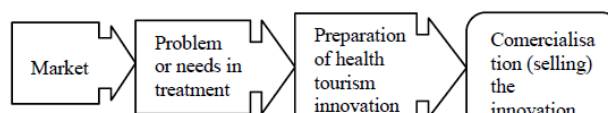


Fig. 2. The innovativeness most popular model for health tourism (*pulled by the market*) in the enterprises opinion

Source: own elaboration based on the research and E. Szymańska, *Innovativeness of Tourism Enterprises in Poland (in Polish)*, Publishing House of Bialystok University of Technology, Bialystok 2009, p. 31. [7]

A comparison of the two models presented in Figs. 1 and 2, i.e. the one suggested by the experts and the one indicated by the service providers, clearly shows differences between them. Above all, the open innovation process is more complex. This is a process which enables the enterprise to open to its environment and cooperation and which facilitates its entry into a new market. In contrast, the diagram showing the linear process is very simple. Such models were developed at the beginning of the development path of innovation theory, i.e. in the mid-1950s. It seems, that, in light of this, it can be concluded that the applied innovation processes should be revised and that providers of health tourism services in Poland lack knowledge or perhaps openness to cooperation with other entities in the external environment.

IV. DISCUSSION

It should be noted that the problem of study of the health tourism innovativeness is just at the beginning. We may also note the low level of use of the different systems (models)

during the innovation process than the linear. The results of this research should be subjected to a deep discussion. It should be considered why enterprises providing services which are so important for society do not follow their customers' opinions in the innovation process. Is this the result of the lack of relevant knowledge among their managers? Or perhaps, knowing that there is a large demand for health services, the employees and entrepreneurs do not see the need to engage patients in the process of creating their offer, organisational processes or interactive forms of marketing. In order to answer the questions which arose in the course of the research, its scope would have to be expanded. And, perhaps, an extensive study of the needs of customers (patients) would pave the way for their broader cooperation.

V. CONCLUSIONS

The main conclusion which can be drawn is that the innovation processes applied at providers of health tourism services have a simple, linear character (33% *pulled by market* and 14% *pushed by market*), indicating an initial stage of the development of innovation processes. A positive phenomenon in the process of development of innovation in the health tourism is the presence of a large variety of systems, because each of the nine described in the questionnaire were used by some or respondents.

In light of the fact that the experts' opinion indicates the open innovation as the most optimum one, it can be recognised that it would be well-advised for managers of the investigated entities to deepen their knowledge concerning the opportunities offered by openness in the course of innovation processes, while this research should be continued to determine which innovation systems (models) are applied by the most innovative enterprises, since it can be presumed that they apply more complex innovation process models.

Following the results of the Delphi survey, the most common system (model) applied in the innovation process at enterprises which provide health tourism services is the open innovation. However, the results of market research showed that these assumptions were wrong. A substantial discrepancy was found between the experts' indications and the innovation processes applied by entrepreneurs. It turned out that the open innovation model was seldom applied on the market, since only 7% of respondents indicated that they used the open innovation process. The most frequently used model is one of linear models; specifically, the market-pulled model, which can be defined as a closed, traditional model.

This is a challenge for the future which demonstrates the need for the relevant research to be deepened. This study is novel in character, both as regards the issues considered and the models elaborated, making a contribution to innovation theory and management science.

VI. RECOMMENDATIONS

On the basis of the results of the research, several important reflections and guidance for further research can be formulated. Summing up, it should be emphasised that the demand for innovations in health tourism will continue to grow. This is a result of the fact that people live longer and of their natural need to retain good health, beauty and good form as long as possible. The practical aspect of the research also

requires the identification of indicators of evaluation of innovative activities in this sector.

Therefore, the attempt to systematise the innovativeness of the entities which provide services in this area addresses this need.

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