

LIVING LAB – CREATIVE ENVIRONMENT AND THINKING TECHNIQUES FOR TOURISM DEVELOPMENT

Irena Šker* and Tamara Floričić

Juraj Dobrila University of Pula – Faculty of Economics and Tourism “Dr. Mijo Mirković”
Pula, Croatia

DOI: 10.7906/indecs.18.2.13
Regular article

Received: 22 January 2020.
Accepted: 2 June 2020.

ABSTRACT

The aim of the article is to analyse the justification for and efficiency of organising a Living Lab within the higher education system as an environment for the development of stimulating tourism ideas and entrepreneurship recommendations, and compare group creative thinking techniques for generating ideas – brainstorming and brainwriting in the Living Lab organisation – as recommendations for the effectiveness of further research.

Through the Living Lab model, the techniques mentioned contribute to the development of creativity and generate quality and innovative ideas and, in accordance with these, the most efficient model for problem-solving in the tourism environment is proposed. The purpose of the article is to present an innovative model for consideration and evaluation of problems and potential solutions in tourism entrepreneurship. The summarised considerations represent a scientific contribution to the new theory of problem solving and innovations in tourism entrepreneurship.

KEY WORDS

Living Lab, innovations, tourism and hospitality, brainstorming, brainwriting

CLASSIFICATION

JEL: I25, O3, Z32

INTRODUCTION

Nowadays, knowledge represents a considerable input for the development of innovations which result in higher degrees of development, more successful economic results and a more competitive position in the modern, challenging and dynamic tourism market.

Creation of an environment in which knowledge, i.e. human capital, occupies first place and contributes to the development of innovations, attracts investment and opens possibilities for a sustainable increase in the number of investments which lead towards long-term economic growth and increase in competitiveness.

The importance of innovations for further economic development is manifested in the most important international and national strategic documents, with a view to creating an encouraging environment. Accordingly, in the international strategic document “Europa 2020” [1] three priorities are proposed, which complement each other, and one of them is smart growth – by developing the economy based on knowledge and innovation. According to the Croatian Ministry of Economics [2] at the national level, the operative programme “Competitiveness and cohesion 2014 – 2020”, encompasses the priority axis – strengthening of the economy by implementation of research and innovations, while the “Strategy of encouragement of innovations of the Republic of Croatia 2014 – 2020” [3] strives to position development and systematic encouragement of innovations as the principal values of economic success, but also of the society as a whole.

For economic success and strengthening of the research-based economy, networking of different sectors is very important: economic, public, and the educational sector, i.e. universities, should be their connection. In Croatia, the problem is present of insufficient networking, i.e. insufficient connection between the educational and economic systems. One of the solutions to this problem can be the model of partnership with the economy itself – the Living Lab organisation.

Living Labs belong to the paradigm of open innovations and include an approach directed towards the user, stresses [4]. They provide “physical regions or virtual realities in which stakeholders form public-private partnerships (PPP) of companies, public agencies, universities, institutes and users who cooperate with the aim of creating and making of a prototype, validation and testing of new technologies, services and systems within the context of real life” [5]. Living labs take advantage of public-private partnerships for generating an initial demand and often involve other actors, such as small and medium-sized enterprises, to lower barriers of entry in complex multi-stakeholder or highly regulated environments. [4, 6] Elaborates the model, which includes partnership between the economy, the public and the governmental bodies, enabling partners to actively participate in the processes of research, development and innovation (Living Lab), achieving an increased affirmation in the world, in which many prestigious universities are included.

The aim of this article is to analyse the justifiability and effectiveness of the networking organisation – the Living Lab – in the system of higher education as an environment for the development of stimulating tourism ideas and entrepreneurial proposals and to compare group creative techniques, brainstorming and brainwriting in Living Lab organisation, as suggestions for the methodology for further research effectiveness. Accordingly to the aim the question arises of how to target the audience to generate ideas that represent the potential for innovative solutions?

Cooperation in the business, educational, research and other fields, i.e. by combination of different areas, considerably contribute to the development of creativity, new ideas, new processes and, generally, to innovations. By networking people, creativity and the possibility of stimulation of innovations are encouraged, and techniques for encouragement of creative thinking are conceived in the way that they assist us in overcoming the “problem of problem

solving”. There are numerous creative thinking techniques which can be applied individually, while some of the methods are directed towards encouragement of group creativity and are thus applied in teams or work groups. Changes in collaborative practices are a turning wheel in innovations and influence shifts forward in design of development strategies in tourism [7]. The practice showed that group and modified methods are more effective and that the interaction among people gives better results and more encouraging ideas. Creativity is a cooperative phenomenon and the most creative ideas are often the result of different forms of human interaction. Other people, their ideas, proposals, comments, suggestions and even misconceptions, have always served as excellent creative thinking “triggers” [4]. The article analyses two creative thinking techniques in the Living Lab environment, brainstorming and brainwriting that have contributed to the generation of ideas and the potential for innovation.

LITERATURE REVIEW

The term Living lab is quite a new phenomenon which appeared in Europe in the first years of the 2000s. A number of cities, including Barcelona, Helsinki and Manchester, were involved in a TEN-Telecom project called “InfoCities” (1996-99) and then in a project called “Intelligent Cities – Intelcities” (2002-05). At the end of the Intelcities project the participating cities agreed to establish a European network dedicated to knowledge exchange on living labs which then went on to become the basis of the first wave of the European Network of Living Labs [8]. This initially consisted of 19 living labs located across the EU, most of which were partners in the Intelcities project, and today ENoLL counts over 150 active Living Labs members worldwide.

Establishment of the Living Lab for the tourism sector represents a potential for the development of local tourist companies, the local community and the entire local area. It is very important that the subject of tourism in the Living Lab be directed towards a specific segment, a specific area or a specific form of tourism so that, on this basis, it is possible to recognise the potential target groups in order to avoid general debates which will not generate innovative solutions.

By means of Living Labs, “tourist service providers will obtain an insight into what tourists actually want” [9]. Not only can such an insight facilitate identification of new markets, but it can also encourage innovations, development and improvement of products [10] through more frequent interaction among stakeholders in a partnership. Interaction among users (tourists), technology providers and tourist services are the key catalysts of innovations [11]. In addition, Living Labs have the potential to become the key catalysts of innovations [12, 13], encouraging open innovations [14], thus creating an environment which promotes cooperation among tourism industry stakeholders in order to enable innovations [15]. This Living Labs approach has as its aim training for cooperation, which is an important constitutional element of the paradigm of open innovations [5].

Living Labs have received limited attention in the literature, despite their growing recognition, diffusion throughout Europe and recent interest from policy makers. This limited attention is linked to the newness of the phenomenon, the high heterogeneity of cases and the consequent lack of definitions and acknowledged frameworks for scholarly analyses [16].

By the analysis of certain definitions of the term Living Lab in the period from the very beginning back in 2004 to date, shown in Table 1, it can be seen that most of the stated definitions include key words which describe the phenomenon itself and we can, therefore, conclude that LLs are characterised by open innovation, user-centric, co-create, real life contexts. Further to the key words, LLs are open innovative environments which act as an integrated network of different stakeholders (PPPP), placing the user in the centre of the research and, by simulation of the real life environment, contributing to the mutual creation of values, i.e. to innovations and development.

Table 1. Definitions of term Living Lab 2004-2019 – Literature review (continued on p.262).

No.	DEFINITION	SOURCE	KEY WORDS
1.	“Consciously constructed social environments in which the uncontrollable dynamics of everyday life are accepted as part of the innovation environment which enables designers and users to co-produce new products and services”	[17]	consciously; everyday life; innovation environment; users co-produce
2.	“A user-centric research methodology for sensing, prototyping, validating and refining complex solutions in multiple and evolving real life contexts”	[18]	user-centric; real life contexts
3.	“Experimentation environment in which technology is given shape in real-life contexts and in which (end) users are considered co-producers”	[19]	experimentation; technology; real-life contexts; users co-producers
4.	“Systemic innovation approach in which all stakeholders in a product, service or application participate directly in the development process”	[20]	systemic innovation approach; participate directly; development process
5.	“Home-like environment by ambient intelligence and ubiquitous computing technologies such as wireless and sensor technologies to sense, prototype and validate complex ICT solutions”	[21]	home-like environment; ambient intelligence; technologies
6.	“A user-centric innovation milieu built on every-day practice and research, with an approach that facilitates user influence in open and distributed innovation processes engaging all relevant partners in real-life contexts, aiming to create sustainable values”	[22]	user-centric innovation milieu; every-day practice and research; open innovation process; real-life contexts; sustainable values
7.	“Open innovation environment in real-life settings in which user-driven innovation is the co-creation process for new services, products and societal infrastructures”	[23]	open innovation environment; real-life; user-driven innovation; co-creation
8.	“Testing in a live environment with real end-users and in cooperation with players from the entire value chain will help companies evaluate their services and allow adjustments and corrections to be made well in advance of launch”	[24]	live environment; real end-users
9.	Living labs also provide “physical regions or virtual realities in which stakeholders form public–private–people partnerships (PPPP) of firms, public agencies, universities, institutes, and users all collaborating for creation, prototyping, validating and testing of new technologies, services, products and systems in real-life contexts”	[25]	physical regions; virtual realities; public–private–people partnerships; real-life contexts

Table 1. Definitions of term Living Lab 2004-2019 – Literature review (continuation from p.261).

No.	DEFINITION	SOURCE	KEY WORDS
10.	“Environments, a methodology or an approach which caters for user-driven open innovation within real-life rural and urban settings/communities, where users can collaborate with multiple committed stakeholders (whether NGOs, SMMEs, industrial, academic/research, government institutions or funders) in one or more locations, to become co-creators or co-designers of innovative ideas, processes or products within multidisciplinary environments. Successful deployments can result in improved processes or service delivery, new business models, products or services, and can be replicated (with necessary socio-cultural adaption) to improve overall quality of life and wider socioeconomic impact (including entrepreneurship) in participating and other communities”	[26]	user-driven open innovation; real-life; collaborate; co-creators; co-designers; multidisciplinary environments
11.	“An R&D concept which aims to create innovations in a multi-contextual, real-world setting”	[27]	R&D concept; innovations; multi-contextual; real-world
12.	“A Living Lab is a design research methodology aimed at co-creating innovation through the involvement of aware users in a real-life setting”	[16]	co-creating innovation; real-life
13.	“Living Labs represent an approach to user-centred innovation by engaging users actively as contributors to the creative and evaluative processes in innovation and development”	[28]	user-centred innovation; engaging users actively
14.	“Living Labs (LLs) are defined as user-centred, open innovation ecosystems based on systematic user co-creation approach, integrating research and innovation processes in real life communities and settings”	[8]	user-centred; open innovation ecosystems; user co-creation; integrating research and innovation; real life

RESEARCH DESIGN AND METHODOLOGY

The testing of the Living Lab concept itself was directed towards students as a target group, given that it represents a significant potential for the generation of ideas and innovative solutions aided by monitoring from the academic community which channelled and organised the processes and led students towards team work and idea development.

A mixed research approach was used in the article, i.e. a combination of the qualitative and quantitative approaches; more precisely, an explanatory sequential design, which includes data collection using first the quantitative, then qualitative methods. The data used for the analysis was initially collected using the survey method of the undergraduate and graduate study students in courses of tourism at the Juraj Dobrila University of Pula. All atypical and incomplete values were excluded as their presence could affect the analysis results. The size of the survey sample was 128.

Following the survey method, for the purpose of testing of the theoretical determinants and research into the possibility of implementation of the concept into the University system, a pilot project testing has been constituted including the methods of team creative thinking, i.e. the brainstorming method, which encompassed the sample of 54 students gathered in 10 teams, and the method of brainwriting, which was made up of a sample of 6 students, were used. The deductive method, the analysis and synthesis method and the statistical methods were also used.

Setting up the Living Lab concept requires individual approach and definition of the phases in the process itself and, given that it concerns the academic community and students as a test group, the following process was defined: problem identification, team definition, idea generation and idea evaluation. For the purposes of realisation of the idea and the possibility of converting it into an innovation, the phases of prototyping and design concept and piloting could be added to the last phase. They represent recommendation for further development and have not been covered in this article.

Bearing in mind that each project idea initially comes from a need to solve a specific problem, the need for a detailed and precise analysis of the problem imposes as essential in the Living Lab process. The initial testing phase of a sample of a total of 60 students started with a presentation and mutual acquaintance of students as a test group for the analysis of the feasibility and efficiency of establishment of the Living Lab organisation in the higher education system, with the cultural tourism locations in the south-east part of Istria, in the areas of the Municipality of Ližnjan. A total of six localities of cultural tourism were presented and a common problem of insufficient valorisation of the said cultural localities was set. This is exactly why the problem analysis is a prerequisite for a proper determination of the project goals, thus a prerequisite also for its success.

The second step in the Living Lab process consisted of definition of the team, i.e. a group of students and mentors who, working together, can contribute to the research goal. Versatility and diversity of the team members are the preconditions for its creative work, which leads to optimal solutions and to achievement of the main goal, with mentors' leadership and expertise. Oriented towards encouragement of creative ideas and innovative solutions in groups, students were organised into 11 teams.

The central Living Lab activity is the research process which is integrated through co-creation, research, experimentation and evaluation of innovative ideas, scenarios, and concepts with the stimulation of the realistic environment, and the research in this article is directed towards the stated phase in the Living Lab process. The choice of brainstorming as a technique for encouragement of group creativity was due to its exceptional simplicity and practicality in the solution of widespread problems, success in generating ideas and extreme efficiency in being conducted within a team.

Using the brainstorming technique, two teams of students elaborated the problem area of insufficient valorisation of each stated cultural locality (1-5) in a total of 60 minutes, while, using the technique of brainwriting, six students, gathered together in a single team, elaborated the problem area of insufficient valorisation of all six stated localities, where every participant had 5 minutes to evaluate each individual case, writing down their ideas for evaluation. This resulted in 6 participants evaluating 6 cultural localities in a total of 30 minutes.

Following the research and generation of innovative suggestions, the Living Lab process requires their evaluation. It is a process of obtaining raw data, breaking the whole into separate components for individual examination and transformation into information, useful for decision making.

Following the conduct of the quantitative idea generation method at the Living Lab, the qualitative aspect of a specific idea was assessed using 4 idea quality indicators: innovativeness,

feasibility, sustainability and potential. In accordance with the methodology [29]. The assessment was carried out by three experts from the field of entrepreneurship and tourism, from the Faculty of Economics and Tourism “Dr. Mijo Mirković” from Pula, acquainted with the areas of the analysed cultural localities. In the article, a total of 2 hypotheses were set, directed towards the comparison of innovative idea generation at the LL environment using the brainwriting and brainstorming techniques.

H₁: given the size of the test sample, i.e. a larger number of respondents gathered in teams for generation of ideas using the brainstorming technique, it is assumed that the same technique will generate a larger number of ideas than the brainwriting technique.

H₂: analysing the qualitative aspect, the generated ideas obtained through the brainstorming technique are more innovative than the ideas generated using the brainwriting technique, due to the assumption of a higher quality and a more innovative approach to team work.

RESULTS OF EMPIRICAL RESEARCH AND DISCUSSION

Further to the research design and according to its implementation, the results are presented, which confirm or disprove the hypotheses set and which point to the developmental potentials of certain aspects of the innovative Living Lab laboratory.

The term of Living Lab is mostly a “new” concept which has been increasingly used in more recent literature as a best practice standard in the field of implementation of open innovations in different business fields, whose concept also includes workshops of creative idea generation. Further to the notion itself of the concept, the intention was to familiarise the respondents with the Living Lab terminology and their participation in a specific form of idea generating workshops.

Table 2. Relative frequencies of familiarity with the Living Lab concept and participation in workshops for development of creative entrepreneurial ideas.

	Familiar	Not familiar	Total
Frequency – N	38	88	126*
%	30,2	69,8	100
	Participation	Non participation	Total
Frequency – N	28	100	128
%	21,9	78,1	100

*two of the respondents did not answer

The calculation of the relative frequency shows that the majority of respondents were not familiar with the Living Lab concept, i.e. only 30,2 % of them were familiar with this concept. The non familiarity with the term itself, but also of the entire concept, is also preceded by the result which shows that only 21,9 % of respondents took part in workshops for development of creative entrepreneurial ideas.

By not being familiar with the concept of Living Lab and by not participating in workshops for development of creative ideas, students, as a test group, represent a potential group for testing the possibility of development, from primary bases, of the Living Lab concept itself, as well as preparedness to engage in and contribute to the testing, due to the fact that 94,5 % of respondents believed that entrepreneurial ideas could be developed by creative research workshops.

The team efficiency is reflected in the number of generated ideas, i.e. by analysing the number of generated ideas per team using the brainstorming technique. Using arithmetic mean it is noted that the mean value of the generated ideas equals 5 (mean = 4,7). Team 1 and team 4 obtained the results which are above the arithmetic mean, i.e. they generated 6 ideas each, which leads to the conclusion that the stated teams are the most efficient in comparison with the others.

Table 3. Number of generated ideas obtained using the brainstorming technique per team.

Team	No. of generated ideas	No. of members	Idea per team member
1	6	6	1,00
2	4	5	0,80
3	5	7	0,71
4	6	6	1,00
5	3	5	0,60
6	5	5	1,00
7	5	5	1,00
8	5	5	1,00
9	4	5	0,80
10	4	5	0,80
N	47		
Mean	4,7		
St. D.	0,949		

The data shows that, according to team work and the number of generated ideas per team, no team presented more ideas in relation to the number of team members. This can be explained by the overlapping of the same ideas which were not expressed, but also by the influence of collective thinking, where team work is aimed towards specific thinking directions where individual creativity does not get affirmed.

Given the small disparity in the team sizes, the intention was to explore whether the number of team members affects the number of generated ideas in the brainstorming technique. Pearson's correlation coefficient confirmed a moderate positive correlation ($r = 0,54$), which means that the number of team members affects the number of generated ideas in the creative thinking brainstorming technique. Comparing the realised number of ideas with the ideas realised using the brainwriting technique, a higher realisation frequency is evidenced through the brainwriting technique. According to the method used, grouping was carried out and the calculations were made of the relative frequencies: out of the total number of 118 ideas, the brainstorming technique produced 47 ideas (39,8 %) and the brainwriting technique produced 71 ideas (60,2 %), which shows that the number of ideas generated using this technique is significantly higher in relation to the brainstorming technique, regardless of the sample size.

Apart from the calculation of the relative frequency of the two creative thinking techniques according to the number of generated ideas, it was noted by sample analysis that 11,83 ideas per team member were generated using the brainwriting technique, while only 0,87 ideas were generated through the brainstorming technique per team member. It was observed that the brainwriting technique members were more efficient in relation to the brainstorming technique members; however, the fact that the creative thinking brainstorming technique allows and stimulates discussions about ideas among members needs to be considered which, as a consequence, has a shorter period of time for generation of ideas than the brainwriting technique.

The problem area of team work influence is also researched and argued by numerous authors, stating that experience showed that the best results are obtained when a cognitive ability and richness which other people possess, i.e. personal and social intelligence, are united. They stress that "it is perfectly clear that a group mind can be much more intelligent than the individual; there is much scientific data confirming this. Excellent team work raises the "group intelligence quotient", where one person's best abilities catalyse what is best in others and much better results are obtained from those realised by a single person" [27]. In his work, he researches and illustrates variables which are most frequently used in the evaluation of the

idea capacity for product development, i.e. indicators for assessment. Following the implementation of the quantitative idea generation in the Living Lab, assessment was carried out of the qualitative aspect of a specific generated idea using 4 idea quality indicators: innovativeness, feasibility, sustainability and potential [27]. This was carried out by three experts from the field of entrepreneurship and tourism.

By analysing the qualitative aspect – the indicator of innovativeness, it is presumed that the ideas generated using the brainstorming technique are more innovative than the ideas generated using the brainwriting technique, taking into consideration the fact of a higher quality and more innovative approach to team work and the following sub hypotheses are set:

H₀: There is no considerable difference between the averages of grades for innovativeness of ideas generated using the techniques of brainstorming and brainwriting.

H_a: There is a considerable difference between the averages of grades for innovativeness of ideas generated using the techniques of brainstorming and brainwriting.

In the analysis of the grades of the generated ideas for the indicators and average grade of innovativeness of the generated ideas using the brainstorming technique a grade of 2,74 is reached, while the average grade of ideas generated using the brainwriting technique equals 3,15, where grade 1 is unsatisfactory and 5 is excellent. By calculating a t-test of two independent samples ($t = 1,58$) it can be concluded that there is no more significant difference between the average grades for innovativeness of the generated ideas using either technique and hypothesis H₀ is accepted, and H_a rejected. The reason for this most probably lies in the quantity of the generated ideas, i.e. given that the largest number of ideas were generated using the brainwriting method, the possibility is greater for innovative ideas.

Table 4. Comparison of grades for innovativeness of ideas generated using the two techniques.

Innovativeness	Brainstorming	Brainwriting
Mean	2,74	3,15
St. Dev.	1,333	1,271
CVar	48,60 %	40,27 %
$t = 1,58 < t = 1,96; p = 0,05$		

Comparing the grading of the generated ideas qualitative aspect through 4 idea quality indicators: innovativeness, feasibility, sustainability and potential from Table 5, it is apparent that the brainwriting technique scored higher average grades through all four observed indicators. The average grades for ideas generated using the brainwriting technique are more innovative, have larger feasibility, sustainability and potential. However, it should be mentioned that there is no significant difference between the grade averages of ideas generated using the brainstorming and brainwriting techniques.

CONCLUSION

As mostly a “new” term in modern literature, Living Lab proved to be insufficiently known also in this research in which the test group consisted of students who, through the survey method, confirmed that most of them were not familiar never taken part in creative thinking workshops. According to the results, the problem with the Living Lab concept and had identified in the article introduction is also confirmed – insufficient networking and cooperation in the development of innovative ideas, i.e. insufficient connection between the educational and economic systems. Further to this, it is recognised as a potential for the development of Living Lab as an incubator for creation of innovative ideas in entrepreneurship

Table 5. Comparison of grades of ideas generated using the two techniques through 4 quality indicators.

Indicator	Technique	Mean	St. Dev.	CVar	t
Innovativeness	BS	2,74	1,333	48,60 %	$t = 1,58 < t = 1,96; p = 0,05$
	BW	3,15	1,271	40,27 %	
Feasibility	BS	3,88	1,210	31,19 %	$t = 0,81 < t = 1,96; p = 0,05$
	BW	4,06	1,120	27,62 %	
Sustainability	BS	3,82	1,009	26,40 %	$t = 0,58 < t = 1,96; p = 0,05$
	BW	3,93	1,002	25,50 %	
Potential	BS	3,86	1,050	27,18 %	$t = 0,03 < t = 1,96; p = 0,05$
	BW	3,89	1,017	26,14 %	

and tourism and their testing through innovative technologies within the higher education institutions, universities and faculties [30]. The students as the test group are not “real” Living Lab organisation stakeholders, stakeholders who have certain practical experience, i.e. experts who are involved in resolution of specific problem areas, which represents one of the research’s limitations; however, they can still represent individuals who are very well acquainted with the local environment’s problem areas and are able to generate innovative ideas which represent a potential for further development.

The justification for and efficiency of the organisation of the Living Lab within the higher education system is evidenced in the networking of students who, by cooperation or team work, using the creative thinking techniques, generated a total of 118 ideas for tourism valorisation of specific cultural localities which, using innovativeness indicators, in total were awarded an average grade of good. A large number of generated ideas, which through the valorisation and selection process can represent exceptional potential for an innovative product or service, justifies the efficiency and performance of the organisation of the Living Lab within the higher education system, as an environment for the development of stimulating tourist ideas and entrepreneurial recommendations. Both of the techniques used for encouragement of the creative thinking, brainstorming and brainwriting, proved to be effective in the development of new ideas in the Living Lab environment. The brainwriting technique generated a larger number of ideas than the brainstorming technique, regardless of the larger test sample in the brainstorming method. In the case of a smaller sample, it is assumed that the brainwriting method is more efficient in the generation of a larger number of ideas. There is the possibility of further research into the brainstorming and brainwriting methodologies on the same sample size as well as implementation of the Delphi research method supporting new knowledge for innovative solutions.

At the same time, the brainwriting technique also generates on average more innovative methods than the brainstorming technique, regardless of the innovative approach and discussions of ideas in a team environment, with the research limitation that a larger number of ideas can also generate more innovative ideas.

In comparing the brainstorming and brainwriting techniques, we can conclude that, through the brainwriting technique, a considerably lower number of respondents contributed to a considerably larger number of generated ideas within half of the time period. However, in the brainstorming technique, there is a possibility of further elaboration and discussion of generated ideas which, using a team approach, can lead to modification of ideas which could be realised through innovative products. Therefore, a combination of both methods is recommended, with previous generation of ideas using the brainwriting technique for the reason of efficiency itself and with the additional use of the brainstorming technique, as further discussion and selection of innovative ideas.

The generated results form a base for further research and development of innovative creative techniques, which, by its processing through realistic business situations of tourism entrepreneurship, contribute to the development of the scientific theory and practice.

Undoubtedly the Living Lab organisation would have a significant and multiplicative value for the resolution of possible problem areas and generation of unique and creative ideas, as well as for their transformation into innovative products or services by means of further selection of generated ideas according to the highest grades for indicators of innovativeness, feasibility, sustainability and potential and their elaboration in a creative differentiated environment through the phases of prototyping, design concept and piloting, in which stakeholders from different areas give their expert opinions.

By setting up the Living Lab organisation, multiple benefits are evident for the local and also wider environment and universities should represent a link between public authorities, the economic sector, citizens and other interested parties and, with their knowledge and research, contribute to the quality of networking, from where possible opportunities and challenges emerge for realisation of innovative solutions.

ACKNOWLEDGEMENTS

First article presented at Entrenova conference 2019 and published in the conference proceedings consisting of the Book of Abstracts and the Proceedings.

The research is carried out under the ATLAS Adriatic Cultural Tourism Laboratories project, approved under the first call standard plus projects Interreg VA Italy – Croatia CBC Programme 2014-2020.

REFERENCES

- [1] European Commission: *Communication from the Commission Europe 2020. A strategy for smart, sustainable and inclusive growth*.
<https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20EUROPE%202020%20-%20EN%20version.pdf>,
- [2] Ministry of Economics: *Operational Programme Competitiveness and Cohesion 2014-2020 2014HR16M1OP001*, 2014.
https://www.mingo.hr/public/investicije/OPKK_2014_2020_31316.pdf,
- [3] Ministry of Economics: *Strategy of innovation encouragement of the Republic of Croatia 2014-2020*.
Narodne novine **153**, 74-110, 2014,
- [4] Ranogajec, V.: *Brainstorming, brainwriting and Delphi method*.
Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, 2014/2015,
- [5] Leminen, S.; Westerlund, M. and Nyström, A.: *Living Labs as open-innovation Networks*.
Technology Innovation Management Review **2**(9), 6-11, 2012,
<http://dx.doi.org/10.22215/timreview/602>,
- [6] Almirall, E.; Lee, M. and Wareham, J.: *Mapping Living Labs in the Landscape of Innovation Methodologies*.
Technology Innovation Management Review **2**(9), 12-18, 2012,
<http://dx.doi.org/10.22215/timreview/603>,
- [7] Guimont, D.; Lapointe, D. and Sevigny, A.: *Changing collaborative practices in tourism – a Living Lab case*.
Canadian Journal of Regional Science **40**(1), 63-69, 2017,
- [8] ENoLL: *Short history of Living Labs. Research and policy context*.
<https://www.scribd.com/document/423662117/Short-History-of-Living-Labs-Research-and-Policy-Context>,

- [9] Lenart, G.; Pucihar, A. and Malesic, A.: *User-centered design of a web-based platform for the sustainable development of tourism services in a Living Lab context*.
In: Caporarello, L.; Di Martino, B. and Martinez, M., eds.: *Smart Organizations and Smart Artifacts Lecture Notes in Information Systems and Organisation*. Springer International Publishing Switzerland **7**, pp.251-266, 2014,
<http://dx.doi.org/10.1007/978-3-319-07040-7>,
- [10] Buhalis, D. and Amaranggana, A.: *Smart tourism destinations*.
In: Xiang, Z. and Tussyadiah, I., eds.: *Information and Communication Technologies in Tourism*. Proceedings of the International Conference Lugano, pp.553-564, 2014,
- [11] Hjalager, A.M.: *Repairing innovation defectiveness in tourism*.
Tourism Management **2**(5), 465-474, 2002,
- [12] Schuurman, D., et al.: *Open innovation processes in Living Lab innovation systems: insights from the LeYLab*.
Technology Innovation Management Review **3**(11), 28-36, 2013,
<http://dx.doi.org/10.22215/timreview/743>,
- [13] Lapointe, D. and Guimont, D.: *Open innovation practices adopted by private stakeholders : perspectives for living labs*.
Info **17**(4), 67-80, 2015,
<http://dx.doi.org/10.1108/info-01-2015-0003>,
- [14] Lapointe, D. et al.: *The living lab approach to raise innovation capability among tourism practitioners*.
Tourism Dimensions **2**(2), 18-27, 2015,
- [15] Najda-Janoszka, M.: *Innovative activity of small tourist enterprises – cooperation with local institutional partners*.
Journal of Entrepreneurship, Management and Innovation **9**(1), 7-32, 2013,
- [16] Dell’Era, C. and Landoni, P.: *Living Lab: A Methodology between User-Centred Design and Participatory Design*.
Creativity and Innovation Management **23**(2), 137-154, 2014,
<http://dx.doi.org/10.1111/caim.12061>,
- [17] Frissen, V. and van Lieshout, M.: *To User Centred Innovation Processes: The Role of Living Labs*.
TNO-ICT, Delft., 2004,
- [18] Eriksson, M.; Niitamo, V.P. and Kulkki, S.: *State-of-the-Art in Utilizing Living Labs Approach to User-centric ICT innovation – a European approach*.
Working paper, Luleå University of Technology, Sweden, 2005,
- [19] Ballon, P.; Pierson, J. and Delaere, S.: *Open Innovation Platforms for Broadband Services: Benchmarking European Practices*.
Proceedings of 16th European Regional Conference, Porto, 2005,
- [20] Feurstein, K.; Hesmer, K.A.; Hribernik, K.D. and Schumacher, J.: *LivingLabs: A New Development Strategy*.
In: Schumacher, J. and Niitamo, V.P., eds.: *European Living Labs–A New Approach for Human Centric Regional Innovation*. Wissenschaftlicher Verlag Berlin, Berlin, pp.1-14, 2008,
- [21] Ståhlbröst, A. and Bergvall-Kåreborn, B.: *FormIT – an Approach to User Involvement*.
In: Schumacher, J. and Niitamo, V.P., eds.: *European Living Labs – A New Approach for Human Centric Regional Innovation*. Wissenschaftlicher Verlag Berlin, Berlin, pp.63-75, 2008,
- [22] Bergvall-Kåreborn, B.; Eriksson, C.I.; Ståhlbröst, A. and Svensson, J.: *A Milieu for Innovation – Defining Living Labs*.
2nd ISPIM Innovation Symposium, New York, 2009,
<https://pdfs.semanticscholar.org/a210/711d9b9bc0a28daa8bb03cfa0f9813a01210.pdf>,
- [23] ENoLL: *Living Lab methodology handbook*.
https://u4iot.eu/pdf/U4IoT_LivingLabMethodology_Handbook.pdf,

- [24] Kallai, T.: *State-of-the-art in Utilizing Living Labs Approach to User-Centric ICT Innovation: Automotive, Rural, eEngineering and Renewable Energy LLs in Hungary*. Proceedings of the 4th International Conference on Management, Enterprise and Benchmarking, 2010,
- [25] Westerlund, M. and Leminen, S.: *Managing the Challenges of Becoming an Open Innovation Company: Experiences from Living Labs*. Technology Innovation Management Review **1**(1) 19-25, 2011, <http://dx.doi.org/10.22215/timreview/489>,
- [26] Cunningham, P.; Cunningham, M. and Herselman, M.E.: *Socio-economic impact of growing Living Labs and Living Lab networks into Africa*. IST-Africa 2012 Conference Proceedings, International Information Management Corporation Ltd, 2012, http://www.istafrica.org/home/files/Supporting_the_Evolution_of_Sustainable_Living_Labs_and_Living_Labs_Networks_in_Africa.pdf,
- [27] Konsti-Laakso, S.; Pihkala, T. and Kraus, S.: *Facilitating SME Innovation Capability Through Business Networking*. Creativity and Innovation Management **21**(1), 1-13, 2012, <http://dx.doi.org/10.1111/j.1467-8691.2011.00623.x>,
- [28] JPI Urban Europe: *Guidelines for urban labs*. <https://jpi-urbaneurope.eu/app/uploads/2016/09/URB@EXP-Guidelines.pdf>,
- [29] Stevanović, M.; Marjanović, D. and Štorga, M.: *Idea assessment and selection in product innovation – the empirical research results*. Technical gazette **23**(6), 1707-1716, 2016,
- [30] Šker, I. and Floričić, T.: *Living Lab – intelligent innovation support for tourism development*. 2019 ENTRENOVA Conference Proceedings, <https://www.entrenova.org/conference-proceedings--book-of-abstracts.html>.