

Change management as a support to the organizations' digital transformation – state of the art

Darko Lugonja

Faculty of Organization and Informatics

University of Zagreb

Pavlinska 2, 42000 Varaždin, Croatia

dlugonja@foi.hr

Abstract. *This paper studies the linkage between the change management and digital transformation (DT), a contemporary change management approach to the DT, “living labs” (LL’s), as a promising and challenging paradigm for DT integration into the organization. The growing number of research and papers in this area note the multidisciplinary, due to complexity and mutual interdependence. During the past few decades, innovations, information and communication technology (ICT), artificial intelligence (AI), and internet of things (IoT), provided significant impact to almost each aspect of human activity, adapting to the changing environment. The aim of this paper is to stress the linkage between the change management, contemporary management approaches, such as “LLs”, their impact and contribution to the agriculture sector DT. A global trend of DT incorporated each industry and sector, leading practitioners to the challenge of the most convenient approach choice.*

Keywords. digital transformation (DT), “living labs”, change management, information and communication technologies (ICT), artificial intelligence (AI), Internet of Things (IoT)

1 Introduction

This paper aims to stress the linkage between the new approaches to change management, such as “living labs” and their impact to DT. (Antle et al., 2017) Recently, the IoT expansion to contemporary business each domain, agriculture as well, lead us to development of the Internet of Everything. IoE (Internet of Everything) as well. (Langley et al., 2019) The “smart cities and smart villages” as a developing concept, indicating holistic and agile multidisciplinary approach to the challenging area such as agriculture sector.

Recent trends in smart communities, either urban and rural, and sustainable DT development, stresses the

impact and importance of the infrastructure. Håkansson, (2018) in Ipsum - An Approach to Smart ICT Infrastructures for Smart Cities and Communities, demonstrates the importance of systematic and tailored approach to smart cities and structures, through the sustainable and systematic ICT application and development tailored to stakeholders' needs.

Considering the change management and the complexity of the topic, this paper is focused onto the DT in business environment. Accordingly, there is a need to take into consideration recent trends, businesses and their specifics, in order to ensure the most convenient approach to DT and change management interconnections. (Spremić, 2017)

2 Change management and the digital transformation

DT is defined as “the profound transformation of business and organizational activities, processes, competencies and models to fully leverage the changes and opportunities of a digital technologies mix and their accelerating impact across society in a strategic and prioritized way, with present and future shifts in mind.” [i-SCOOP.eu, 2016]

Tomičić Furjan, Tomičić-Pupek and Pihir, (2020) presented background, business, and technology-related concepts or factors relevant to DT initiatives as well as the transformation drivers and expectations, considering the fact that there is no single one right combination of technological concepts that could be explicitly determined. DT changes all – organization, models, processes, relationships, products (Schallmo et al., 2017), incorporating cultural and organizational changes needed for new digital technologies usage, in order to enable significant improvements - such as better user experience, rationalization of business operations and innovation of products or services and business models (Brown et al., 2014), as well as to improve business performance (Čorejova et al., 2016).

DT deals with technological and non-technological aspect and change management operative level changes through the improved products, organisational structures or processes automation (Clohessy et al., 2017), it shows their impact across society in a prioritised way through the transformation of business activities, processes, competencies and whole business models (Betchoo, 2016). Enterprises need DT so to provide new or enhanced products and services to the customers, where technologies are the means, key enablers or even part of the offering (Nandico, 2016). Recent papers are indicating DT industries impact, a systematic approach upon the real-life case studies, considering the context. (Kutnjak, Pihir, Furjan, 2019).

In an overview of DT perspectives Westerman et al. categorized all digital initiatives into three main groups: Substitution (digital technologies replace an existing process), Extension (digital technologies improve the functionality of an existing process) and Transformation (digital technologies fundamentally redefine or create a new process). (Westerman et al. 2014) DT maturity determinants have to be considered also. In order to improve the DT maturity there are necessary focuses: a) Strategy orientation, b) Customer centricity, c) ICT and process infrastructure, d) Talent, capability and capacity strengthening, e) Innovation culture and organizational commitment. (Pihir, Tomičić-Pupek, Furjan-Tomičić, 2018).

Not only the benefits, but also challenges are related to DT and its impact to the change in almost each aspect. (Tabrizi, 2019) They are recognized and described as “potential problems” and could be classified into the challenges, issues, barriers or just problems depending on weight and time dimension, what was made in further steps. (Kutnjak, Pihir, 2019) Amongst the various influences on DT drivers, considering the business model creation, there is a need for the consideration of change management drivers (Hrustek, Tomičić Furjan and Pihir, 2019)

Cameron and Green (2019) described the key points and making sense of change management connecting it to the DT. McKinsey Global Survey on DT (2018), has shown the issues and new opportunities in DT, from various aspects. According to AlManei et al. (2018) change can be distinguished by following components: Scale, Scope, Time and Outcome. They defined change management as the “area of study that aims to facilitate the transition of individuals, teams or the whole organization by managing them. Actually, the purpose is to lead and guide the process from the current state to the intended future state by managing and controlling the different difficulties in order to overcome resistance.” (AlManei et al. 2018)

One of the critical issues of DT is the ICT adoption, presented in study “The contribution of ICT adoption to a sustainable information society”. (Ziemba, 2017)

The Social Living Labs were presented as a paradigm for Digital Participation through Social Living Labs, from the tech perspective high speed internet access and associated ICT, expected to bring

connectivity, economic development, innovation, etc. Recent research has established that access by itself is necessary but not sufficient to foster digital participation for the broadest possible range of individuals. (Dezuanni, Foth, Mallan, Hughes, 2017)

3 The digital transformation framework

Sustainability of technological development with human resources is the basis of sustainable development, needed to be seen through the impact of the organization cultural dimensions. (Hofstede 2011)

DT is also tied to the Unified Communications (UC) paradigm, a concept that describes the services integration, messaging, mobile communications, voice, web and video conferencing, fixed and mobile telephony (FMC), desktop sharing, data sharing, call and speech control, unified messaging (integrated voicemail, email, SMS and fax). Johansson et al. (2019), presented 6 areas of communication maturity: 1) understanding, 2) functioning, 3) organization, 4) prerequisites, 5) competencies and 6) practices, including communication assessments. A study of communication conducted by Johansson et al. (2019) described how the communication managers and practitioners vary between organizations and how they cope with organization change. (Johansson et al., 2019) Welch (2012) explores media attitudes and preferences and employee preferences, defining internal communication as “communication between strategic managers and internal stakeholders designed to promote commitment and a sense of belonging to an organization, to develop awareness of a changing environment and understanding of its evolving goals”. The constitutive perspective of communication is advocated by Gregory and Halff (2017), pointing out that all members accept communication and should be equipped, trained, and encouraged to participate in conversations that contribute to value creation.

Designing organizations stresses the importance of change management, organizational design, improvement and development of organization by finding the optimal combination of approaches to DT challenges. (Fabac, 2017) Research on personality traits (McCrae, Costa 1999) and their contribution to the development of the organization are increasingly represented, as well as research on cultural dimensions (Hofstede, 2011), given the globalization and influence of individual characteristics and growing cultural influence (Vidaček- Hainš, 2016).

DT is mainly related to the growing need for ICT use so to remain competitive in the age of the Internet of Everything (IoE) (Langley et al., 2019).

Dunleavy et al. (2006) in "Digital Era Governance" state that technology in itself does not change organizations, but the way organizations work and their use of technology changes work practices. Ismail

et al. (2017), described DT as “The process through which companies converge multiple new digital technologies, enhanced with ubiquitous connectivity, with the intention of reaching superior performance and sustained competitive advantage, by transforming multiple business dimensions, including the business model, the customer experience (comprising digitally enabled products and services) and operations (comprising processes and decision-making), and simultaneously impacting people (including skills talent and culture) and networks (including the entire value system)”. (Ismail et al., 2017)

Recent COVID-19 pandemic shown organizations and individuals change, facing issues in each phase of such a complex process are dedicated and focused onto DT practical solutions. Abraham (2019) described the DT during the change initiative, structure, work processes, people, tech and tools, culture and shared values, tasks, procedures, strategy and strategic plans, leadership style, and policies. (Abraham, 2019) McKinsey’s 7 S model stresses the use of 7 s’ within the context of undertaking a change model and incorporating 7 change model critical elements.

3.1 Lewin’s Change Management Model

Lewin (1951) conceptualized and documented a specific change management model and presented it in 1951. Regardless of the 7-decade history, this model passed the test of time and various applications with regard to different business settings (Abraham, 2019; Galli, 2019).

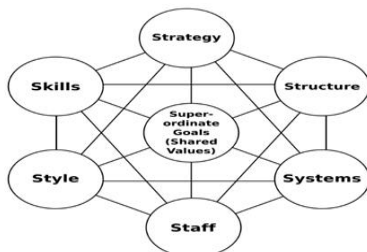


Figure 1: The McKinsey 7-S framework, Source: Hayes, J. (2014). *The Theory and Practice of Change Management*.

Lewin proposed a three-stage change model, also referred to as “the force field change management model”. (Galli, 2019) Lewin’s implementation theory consists of three phases:

- Unfreeze
- Change / Moving
- Re-freeze

This model has a people-centered focus (Galli, 2019) and is considered to be one of the most suitable for a change management initiative, but it has been undervalued due to evaluation of being too simplistic and mechanistic. (Galli, 2019)

3.2 Kotter's model of organizational change

Kotter (2007), developed 8-stage model aiming to help the issue arising from the change implementation. His model includes accelerators as the key steps that could be implemented so to ensure the change process fulfilment, featuring 8 change accelerators as follows:

- 1) a sense of urgency establishing
- 2) a guiding coalition creating
- 3) a vision and strategy developing
- 4) the change vision communicating
- 5) a broad-based action empowering
- 6) the short-term wins generating
- 7) more gains and change consolidating
- 8) the new approaches in the culture anchoring (By, 2005)

3.3 ADKAR Change Management Model

Hiatt (2016) developed the ADKAR change model, supporting an effort to enhance change in individuals, as they are organizations’ change objects, considered as an individual-target change framework. Hiatt (2016) described five factors that influence successful awareness building in individuals:

- A person’s view of the current state;
- How a person perceives problems;
- Sender awareness messages credibility and the organization’s history with change;
- The presence of misinformation or propaganda in the background conversation;
- Contestability of the reasons for change
- External / observable drivers’ presence (Hiatt, 2016)

The model, with its advantages and disadvantages, aimed for government change integration, and the society with the individual level in focus. The model is evidence-based, supported by clear and simple change language, covering all levels and incorporating the change strategies into everyone’s everyday work life, but also provides the ability to scale across large and diverse organizations as it provides an understanding of how people change. (Wong et al., 2019)

4 Living Labs – an innovative and adaptive approach

Innovation designed “with users”, brings products/ services co-designed with both designers and active users. The European Network of Living Labs (ENoLL) defines Living Labs as “user-centered, open innovation ecosystems based on systematic user co-creation approach, integrating research and innovation processes in real life communities and settings. Innovation designed “by users”. It leads users to the innovators’ role, from the idea, inspiring others, prototypes creating, till the solutions and content

developing, so designers got facilitators' role. Nesti, (2018) described LL's connection to the innovation, and their contribution to the stakeholders' contribution development. (Nesti, 2018)

The concept of Living Laboratories (Living Labs – LLs) is created by MIT's Prof. William Mitchell, who provided the idea and its development, by connecting the computing capacities and benefits, sensing and ICT, in order to move the innovation research from in vitro to in vivo settings (Dutilleul et al., 2010). The term Living Lab was used to describe the process for conducting user research in the context of smart homes or homes of the future (Bergvall-Kåreborn et al., 2009; Dutilleul et al., 2010). LLs can be observed, recorded and experimentally manipulated with volunteer research participants individually living in the lab, treating it as a temporary home (Rogel, 2013). LLs are related to the Open Innovation concept (Chesbrough, 2006), that is, on the benefit of opening up innovation processes to the users (Colobrans, 2019). No matter the fact the concept was developed in the North America, it was particularly successful in Europe. (Zavratnik et al., 2019) Schuurman (2014) presented the "LL anatomy", to describe the relations and model itself.

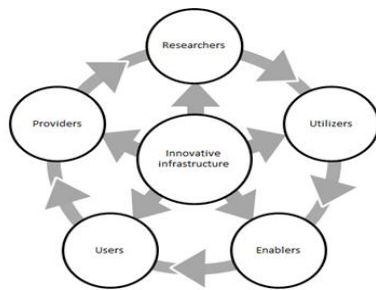


Figure 2: The anatomy of a living lab, Source; Schuurman, D. (2014). Knowledge exchange for innovation development in open innovation systems: LLs as innovation intermediaries & knowledge brokers aligning user & stakeholder input.

European and global LLs community was established in 2006, forming the European Network of Living Labs (ENoLL) (EC, 2009) a month after the Helsinki Manifesto (2006). ENoLL's definition describes LLs as a new research area in which human ideas and needs, from multi-actor and participatory perspective (a public-private partnerships), established as a starting point in innovation and transition towards new productive, governance, consuming and living models. Westerlund and Leminen (2014) defined LLs as: "physical regions or virtual realities, or interaction spaces, in which stakeholders form public-private-people partnerships (4Ps) of companies, public agencies, universities, users, and other stakeholders, all collaborating for creation, prototyping, validating, and testing of new technologies, services, products, and systems in real-life contexts". (Westerlund and Leminen, 2011) Lane (2017) approach to multiple perspectives and reflecting on boundary judgements, recognized as Systems thinking represent an approach, a viewpoint, thinking and acting in an environment that

takes into account particular relations, connections, impacts and circumstances, creating a whole new world.

Aversano et al. (2016) pointed to a general defining element of Living Labs is the ability to study users in a natural setting (Schuurman et al., 2011). Zavratnik et al. (2019) defined the common points that contribute to understanding the LL concept:

- a) openness to inviting different collaborators, addressing different themes, and including the public;
- b) innovation, as one of the main ingredients, the aim and the principle of LLs;
- c) co-creation, as the involvement of users and stakeholders at all stages of the products development;
- d) real-life setting, through real life or work settings. (Leminen et al., 2012)

Leminen et al. (2012) conducted 103 semi-structured interviews with representatives of 26 living labs in four countries between 2007 and 2011, and distinguished 4 types of living labs. Their differentiation is based on which actor drives their activities: utilizer-driven, enabler-driven, provider-driven and user-driven. Bergvall-Kåreborn et al. (2009) identified five LLs' principles: 1) Openness, 2) Influence, 3) Realism, 4) Value and 5) Sustainability. These Principles provide the foundation for LLs operations' design. (Bergvall-Kåreborn et al., 2009) LL common methodology is called harmonization cube, as they include, harmonize and exchange best practices developed by Mulder et al. (2007). Helsinki manifesto (2006) stated that, "This approach should ensure that common methodologies and tools are developed across Europe that support, stimulate and accelerate the innovation process It can be said that harmonization of LL methods and tools is key." (Mulder et al., 2008). Veeckman et al. (2013) developed the LL Triangle framework so to guide empirical research into the implementation and the related outcomes of LLs. Leminen et al. (2012) found that LL depends on: i) strategic intention; ii) passion; iii) knowledge and skills; iv) other resources; and v) partners in the living lab network.

5 Conclusion

Rural and urban areas, industry and other sectors, are facing the turbulence of global changes, meeting new opportunities and challenges. Recent ICT and tech innovations in general are leading to the various outcomes and benefits.

All those opportunities and challenges were given to each stakeholder, particularly the researchers dealing with the DT in any aspect. Recent studies and papers have shown that the most of the approaches and issues were related to the change management. Managing changes in organizations, as well as individually, depends on the stakeholders' support, either the political, economic, legal and social aspect. Managing change need to be a component of the social, economic,

political and cultural development, considering the critical issues, developed according to its specifics.

References

- Abraham, T. O. (2019). *The Interplay between Change and Project Management for Business Results* (Doctoral dissertation, The University of Texas Rio Grande Valley).
- AlManei, M., Salonitis, K., & Tsinopoulos, C. (2018). A conceptual lean implementation framework based on change management theory. *Procedia CIRP*, 72, 1160-1165.
- Antle, J. M., Jones, J. W., Basso, B., Boote, K. J., Conant, R. T., Foster, I., ... & Keating, B. A. (2017). Toward a new generation of agricultural system data, models, and knowledge products: State of agricultural systems science. *Agricultural systems*, 155, 269-288.
- Aversano, P., Baccarne, B. and Schuurman D. (2016) *Implementation Living Lab methodology*. D3.3 of CreatiFI, Leveraging the Future Internet for the Creative Industries. <https://cordis.europa.eu/docs/projects/cnect/5/632905/080/deliverables/001-D33ImplementationLivingLabMethodology.pdf>
- Ballon, P. and Schuurman, D. (2015) *Living Labs: Concepts, Tools and Cases*. *Info*, 17(4), <https://doi.org/10.1108/info-04-2015-0024><https://www.emeraldinsight.com/doi/full/10.1108/info-04-2015>
- Bergvall-Kåreborn, B., Eriksson, C. I., Ståhlbröst, A., & Svensson, J. (2009). A milieu for innovation: defining living labs. In *ISPIM Innovation Symposium: 06/12/2009-09/12/2009*.
- Betchoo, N. K. (2016, August). *Digital Transformation and its impact on Human Resource Management: A Case Analysis of two unrelated businesses in the Mauritian public service*. In 2016 IEEE International Conference on Emerging Technologies and Innovative Business Practices for the Transformation of Societies (EmergiTech) (pp. 147-152). IEEE.
- IEEE International Conference on Emerging Technologies and Innovative Business Practices for the Transformation of Societies (EmergiTech), 2016, pp.147-152.
- Brown, A., Fishenden, J., & Thompson, M. (2014). *Organizational Structures and Digital Transformation*. In *Digitizing Government* (pp. 165-183). Palgrave Macmillan, London.
- By, R. T. (2005). *Organisational change management: A critical review*. *Journal of change management*, 5(4), 369-380.
- Cameron, E., & Green, M. (2019). *Making sense of change management: A complete guide to the models, tools and techniques of organizational change*. Kogan Page Publishers.
- Chesbrough, H. (2006). *Open business models: How to thrive in the new innovation landscape*. Harvard Business Press.
- Clohessy, T., Acton, T., & Morgan, L. (2017). The impact of cloud-based digital transformation on IT service providers: evidence from focus groups. *International Journal of Cloud Applications and Computing (IJCAC)*, 7(4), 1-19.
- Colobrans, J. (2019). *Living Lab Guide*, MIND b4 ACT. https://mindb4act.eu/wp-content/uploads/2019/03/Living-Lab-Guide_web.pdf
- Čorejová, T., Rovňanová, A., Genzorová, T., & Valica, M. (2016, November). *Digital Transformation and its impact on brand*. In *Marketing Identity Part 2, Conference Proceedings from International Scientific Conference* (pp. 54-65).
- Das, V. (2019). *Comparative study of Kotter's and Hiatt's (ADKAR) change models*. *Journal of Leadership and Management*, 1(15).
- Dell'Era, C., & Landoni, P. (2014). *Living Lab: A methodology between user-centred design and participatory design*. *Creativity and Innovation Management*, 23(2), 137-154.
- Dezuanni, M., Foth, M., Mallan, K., & Hughes, H. (Eds.). (2017). *Digital participation through social living labs: Valuing local knowledge, enhancing engagement*. Chandos Publishing.
- Dunleavy, P., & Margetts, H. Z. (2010). *The second wave of digital era governance*. In *APSA 2010 Annual Meeting Paper*.
- Dutilleul, B., Birrer, F. A., & Mensink, W. (2010). *UNPACKING EUROPEAN LIVING LABS: ANALYSING INNOVATION'S SOCIAL DIMENSIONS*. *Central European journal of public policy*, 4(1).
- EC / European Commission (2009). *Living Labs for User-driven Open Innovation: An Overview of the Living Labs Methodology, Activities and Achievements*. Office for Official Publications of the European Communities, Luxembourg. https://www.eurosportello.eu/sites/default/files/Living%20Lab%20brochure_jan09_en_0.pdf
- ENoLL – living labs definition – web link to: <https://journal.laurea.fi/living-labs-from-abstract-ion-to-implementation-case-circ4life-living-labs/>
- European Commission Digital Strategy (2018), at: https://ec.europa.eu/info/publications/EC-Digital-Strategy_en
- Task, T., Malmberg, K., Vaitinen, I., Ståhlbröst, A., LTU, A. S., Breuer, J., & Carter, D. (2017). *D2. 2: Living Labs Methodology Handbook*.

- Fabac, R. (2017). Dizajniranje organizacije i upravljanje promjenama–projektni pristup. Naklada Slap, Zagreb, Hrvatska.
- Følstad, A. (2008). Living labs for innovation and development of information and communication technology: a literature review.
- Galli, B. J. (2019). Comparison of Change Management Models: Similarities, Differences, and Which Is Most Effective? In *R&D Management in the Knowledge Era* (pp. 605-624). Springer, Cham.
- Gregory, A., & Halff, G. (2017). Understanding public relations in the 'sharing economy'. *Public Relations Review*, 43(1), 4-13.
- Håkansson, A. (2018). Ipsum–An Approach to Smart Volatile ICT-Infrastructures for Smart Cities and Communities. *Procedia computer science*, 126, 2107-2116.
- Hayes, J. (2018). The theory and practice of change management. Palgrave.
- Hee, O. C. and Shanmugam, N. (2019). A Review of Human Resource Change Management Strategies in the Digital Era. *International Journal of Academic Research in Business and Social Sciences*, 9(3): 521–531.
- Helsinki Manifesto, The (2006) “We have to move fast, before it is too late.” http://elivinglab.org/files/Helsinki_Manifesto_201106.pdf
- Hiatt, J.M. and Creasey, T.J. (2012). *Change management: The people side of change*. Prosci Inc.: Loveland, CO.
- Hiatt, J. M. (2006). *ADKAR: A Model for Change in Business, Government and Our Community*. Prosci Inc.: Loveland, CO.
- Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. *Online readings in psychology and culture*, 2 (1), 1-26.
- Holden, R. J., Or, C. K., Alper, S. J., Rivera, A. J., & Karsh, B. T. (2008). A change management framework for macroergonomic field research. *Applied ergonomics*, 39(4), 459-474.
- Holst, M., Ståhlbröst, A. and Sällström, A. (2009). *Peoples Voice*. CDT – Centre for Distance-Spanning Technology at Luleå University of Technology, Sweden. <https://www.ltu.se/centres/cdt/Resultat/2.59039/Metoder-och-handbocker/Peoples-Voice-1.101551?l=en>
- Hrustek, L., Furjan, M. T., & Pihir, I. (2019, May). Influence of Digital Transformation Drivers on Business Model creation. In 2019 42nd International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO) (pp. 1304-1308). IEEE.
- i-SCOOP.eu (2016). Digital transformation: online guide to digital business transformation. Web: <https://www.i-scoop.eu/digitaltransformation/>
- Ismail, M. H., Khater, M., & Zaki, M. (2017). Digital business transformation and strategy: What do we know so far. Cambridge Service Alliance, 10.
- Johansson, C., Grandien, C., & Strandh, K. (2019). Roadmap for a communication maturity index for organizations—Theorizing, analyzing and developing communication value. *Public Relations Review*, 45(4), 101791.
- Kotter, J. P. (2009). Leading change: Why transformation efforts fail. *IEEE Engineering Management Review*, 37(3), 42-48.
- Kotter, J. P. (2008). *A sense of urgency*. Harvard Business Press.
- Kotter, J. (2007). Leading change: Why transformation efforts fail. *Harvard business review*, 86, 97-103.
- Kotter, J. P. (1996). *Leading change*. Boston, MA: Harvard Business School Press. Kotter, J.(2001). What leaders really do. *Harvard Business Review*, 79, 11-85.
- Kutnjak, A., Pihir, I., & Furjan-Tomičić, M. (2019, May). Digital Transformation Case Studies Across Industries–Literature Review. In 2019 42nd International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO) (pp. 1293-1298). IEEE.
- Kutnjak, A., Pihir, I. (2019). Challenges, Issues, Barriers and Problems in Digital Transformation–Systematic Literature Review. In 11 th International Doctoral Seminar (IDS 2019) (p. 7).
- Langley, D. J., van Doorn, J., Ng, I. C., Stieglitz, S., Lazovik, A., & Boonstra, A. (2020). The Internet of Everything: Smart things and their impact on business models. *Journal of Business Research*.
- Leminen, S., & Westerlund, M. (2017). Categorization of innovation tools in living labs.
- Leminen, S. (2015). Q&A. What Are Living Labs? *Technology Innovation Management Review*, 5(9): 29–35. <http://timreview.ca/article/928>
- Leminen, S., Westerlund, M., & Nyström, A. G. (2012). Living Labs as open-innovation networks.
- Lewin, K. (1951). *Field theory in social science: selected theoretical papers* (Edited by Dorwin Cartwright.). Harpers.
- Liu, D.-Y., Chen, S.-W. and Chou, T.-C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision*, 49(10): 1728–1742
- Living Lab Methodology https://u4iot.eu/pdf/U4IoT_LivingLabMethodology_Handbook.pdf

- McKinsey 7S Change Model <https://www.managementstudyguide.com/transformational-change-and-change-management.htm>
- McKinsey Global Survey on digital transformations (2018), <https://www.mckinsey.com/business-functions/organization/our-insights/unlocking-success-in-digital-transformations#>
- McCrae, R. R., & Costa, P. T., Jr. (1999). A Five-Factor theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (p. 139–153). Guilford Press.
- Mulder, F. (2007). The advancement of lifelong learning through open educational resources in an open and flexible (self) learning context. *Open Education Research*, 4, 1-10.
- Nandico, O.F. (2016), “A Framework to Support Digital Transformation“, in El-Sheikh, E. et al. (Ed.), *Emerging Trends in the Evolution of Service-Oriented and Enterprise Architectures*, Intelligent Systems Reference Library 111, pp. 113-138
- Nesti, G. (2018) Co-production for innovation: the urban living lab experience, *Policy and Society*, 37:3, 310-325, DOI: 10.1080/14494035.2017.1374692, To link to this article: <https://doi.org/10.1080/14494035.2017.1374692>
- Pejić Bach, M., Spremić, M., & Suša Vugec, D. (2018). Integrating digital transformation strategies into firms: Values, routes and best practice examples. *Management and Technological Challenges in the Digital Age*, 107-128.
- Pérez-Trejo, F., Pereira, L.D., Guzmán, J.G. and de la Cruz, M.N. (2010). Living Labs and Rural Development: Towards a Policy Agenda. In: Schaffers, H., Guzmán, J.G., de la Cruz, M.N. and Merz, C. (Eds.) *Living Labs Rural Development: Results from the C@R Integrated Project*, pp. 227–246. TRAGSA & FAO: Rome. <http://www.c-rural.eu/dmdocuments/C@RBook.pdf>
- Pfeifer, T., Schnitt, R. and Voigt, T. (2005). Managing change: quality-oriented design of strategic change processes. *The TQM Magazine*, 17:297–308
- Pihir, I., Tomičić-Pupek, K., & Furjan, M. T. (2018). Digital Transformation Insights and Trends. In *Central European Conference on Information and Intelligent Systems* (pp. 141-149). Faculty of Organization and Informatics Varaždin.
- Pihir, I., Tomičić-Pupek, K., Tomičić Furjan, M. (2019). Digital Transformation Playground - Literature Review and Framework of Concepts. *Journal of Information and Organizational Sciences*, access to the page Sept. 6th 2020. 43(1). <https://doi.org/10.31341/jios.43.1.3>
- Pollack, J. and Pollack, R. (2015). Using Kotter’s eight stage process to manage an organisational change program: Presentation and practice. *Systemic Practice and Action Research*, 28(1): 51-66.
- Potters, J., Collins, K., Schoorlemmer, H., Stræte, E.P., Kilis, E. and Lane A. (2020). Journeys in Living Labs: Co-creating innovation support services. Paper in *Farming Systems Facing Climate Change and Resource Challenges* (14th IFSA Conference), Évora, Portugal, July 12-16 2020.
- Ravetz, J., Evans, J. and Astbury, J. (2018) Guidelines for Living Labs. D.4.1. LOOPER (Learning Loops in the Public Realm) project http://looperproject.eu/wp-content/uploads/2018/08/LOOPER_D4.1_Guidelines-for-Living-Labs_FINAL.pdf
- Robles, A.G., Hirvikoski, T., Schuurman, D. and Stokes L. (2015). Introducing ENOLL and its Living Lab community. *European Network of Living Labs. ENOLL*. <https://issuu.com/enoll/docs/enoll-print>
- Rogel, L. (2013). Housing Lab. A laboratory for collaborative innovation in urban housing. Doctoral Thesis. Politecnico di Milano, Indaco Department, Doctoral Programme in Design. <https://www.politesi.polimi.it/handle/10589/82782>
- Sikorko, P. (2008) Transforming library and higher education support services: can change models help? *Library Management*, 29:307–318
- Schallmo, D., Williams, C. A., & Boardman, L. (2017). Digital transformation of business models - best practice, enablers, and roadmap. *International Journal of Innovation Management*, 21(08), 1740014.
- Schuurman, D. (2015). Bridging the gap between Open and User Innovation? ; exploring the value of Living Labs as a means to structure user contribution and manage distributed innovation. Doctoral dissertation, Ghent University.
- Schuurman, D., de Marez, L. and Ballon, P. (2015) Living Labs: A Systematic Literature Review. In *Proceeding of the Open Living Lab Days*, Istanbul, Turkey. 2015. <https://biblio.ugent.be/publication/7026155/file/7026171.pdf>
- Schuurman, D., Mahr, D., and De Marez, L. (2011). User characteristics for customer involvement in innovation processes: deconstructing the Lead User-concept. Presented at *ISPIM XXII*, Hamburg. <https://biblio.ugent.be/publication/1887184>
- Small, A., Gist, D., Souza, D., Dalton, J., Magny-Normilus, C. and David, D. (2016). Using Kotter's change model for implementing bedside handoff: a quality improvement project. *Journal of nursing care quality*, 31(4): 304-309.
- Smith, R., King, D., Sidhu, R. and Skelsey, D. (2014). *The effective change manager’s handbook: Essential guidance to the change management body of knowledge*. The APM Group Limited: Philadelphia, PA.

- Solis, B. R. I. A. N., Li, C., & Szymanski, J. (2014). The 2014 state of digital transformation. Altimeter Group.
- Spremić, M., (2017.), Digitalna transformacija poslovanja, Zagreb, Ekonomski fakultet
- Ståhlbröst, A. and Holst, M. (2012). The Living Lab Methodology Handbook. Social Informatics at Luleå University of Technology and CDT – Centre for Distance-spanning Technology, Sweden. https://www.ltu.se/cms_fs/1.101555!/file/LivingLabsMethodologyBook_web.pdf
- Ståhlbröst, A. (2008). Forming Future IT - The Living Lab Way of User Involvement. Doctoral Thesis. Luleå University of Technology, Department of Business Administration and Social Sciences, Division of Informatics.
- Ståhlbröst, A., and Bergvall-Kåreborn, B. (2008). FormIT – An Approach to User Involvement. In J. Schumacher and V.-P. Niitamo (Eds.), *European Living Labs - A new approach for human centric regional innovation*, pp. 63-76. Wissenschaftlicher Verlag, Berlin.
- Stragalas, N. (2010). Improving Change Implantation: Practical Applications of Kotter's Model. *Organizational Development Practitioner*, 42(1): 31–39.
- Tabrizi, B., Lam, E., Girard, K., Irvin V., (2019), Digital Transformation Is Not About Technology - Change Management, *Harvard business review*, <https://hbr.org/2019/03/digital-transformation-is-not-about-technology>
- Tomičić Furjan, M., Tomičić-Pupek, K., Pihir, I. (2020), "Understanding Digital Transformation Initiatives: Case Studies Analysis", *Business Systems Research*, Vol. 11 No. 1, pp. 125-141.
- Veeckman, C., Schuurman, D., Leminen, S. and Westerlund, M. (2013) Linking Living Lab Characteristics and Their Outcomes: Towards a Conceptual Framework. *Technology Innovation Management Review*, 3: 6-15. <https://biblio.ugent.be/publication/4217623> access to the page Feb. 6th 2020.
- Vidaček Hainš, V. (2016), Experience and attitude towards using information and communication technology in teaching and learning, ICBTS International social sciences and research conference in Tokyo, <http://www.icbtsconference.com/15276359/japan-social-sciences-education-conference>, access to the page Feb. 6th 2020.
- Welch, E. W. (2012). The rise of participative technologies in government. *Transformational government through eGov practice: Socioeconomic, cultural, and technological issues*, 347-367.
- Westerlund, M., and Leminen, S. (2014). The Multiplicity of Research on Innovation through Living Labs. XXV ISPIM Conference, Dublin, Ireland, June 8–10, 2014. <https://search.proquest.com/openview/fb5538002c77297ab67ab47b10e760e3/1?pq-origsite=gscholar&cbl=1796422>
- Westerlund, M., and Leminen, S. (2011). Managing the Challenges of Becoming an Open Innovation Company: Experiences from Living Labs. *Technology Innovation Management Review*, 1(1): 9–25. <http://timreview.ca/article/489>
- Westerlund, M., Leminen, S. and Habib, C. (2018) Key Constructs and a Definition of Living Labs as Innovation Platforms. *Technology Innovation Management Review*, 8: 51–62. <https://timreview.ca/article/1205>
- Westerman, G., Bonnet, D., & McAfee, A. (2014). The nine elements of digital transformation. *MIT Sloan Management Review*, 55(3), 1-6.
- Wong, Q., Lacombe, M., Keller, R., Joyce, T. and O'Malley, K. (2019). Leading change with ADKAR. *Nursing management*, 50 (4): 28-35.
- Zavratnik, V., Superina, A. and Stojmenova Duh, E. (2019) Living Labs for Rural Areas: Contextualization of Living Lab Frameworks, Concepts and Practices. *Sustainability* 11(14), 3797; <https://doi.org/10.3390/su11143797>, <https://www.mdpi.com/2071-1050/11/14/3797>
- Ziamba, E. (2017, September). The ICT adoption in enterprises in the context of the sustainable information society. In *2017 Federated Conference on Computer Science and Information Systems (FedCSIS)* pp. 1031-1038.